REPORT RESUMES

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PROGRESSIVE CHOICE READING INSTRUCTION IN THE PRINCE EDWARD COUNTY SCHOOL SYSTEM.

BY- GROTBERG, EDITH H.
INSTITUTE OF EDUCATIONAL RESEARCH, WASHINGTON, D.C
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DESCRIBED ARE THE ACTIVITIES OF THE PRINCE EDWARD COUNTY SCHOOL PROJECT (1966-67), WHICH WAS CONDUCTED TO DETERMINE THE VALUE OF INTENSIVE READING INSTRUCTION IN A RURAL SCHOOL SYSTEM. THE PROJECT LASTED APPROXIMATELY 7 MONTHS AND INVOLVED NEARLY 1,500 STUDENTS. DESIGNED AS A CORRECTIVE READING PROGRAM FOR ALL CHILDREN IN GRADES ONE THROUGH 10 IN THE PUBLIC SCHOOLS, IT USED AS ITS PRIMARY MATERIALS "THE BASAL PROGRESSIVE CHOICE" AND "THE ACCELERATED PROGRESSIVE CHOICE READING METHODS." INCLUDED IN THE REPORT ARE A DESCRIPTION OF THE PROGRAM MATERIALS AND OF THE TRAINING OF TEACHERS AND AIDES IN THEIR USE, A DISCUSSION OF THE PROBLEMS INVOLVED IN EVALUATING THE PROJECT AND THE WAY IN WHICH THE PROGRAM FUNCTIONED. ONE SECTION DEALS WITH PRETEST, INTERIM, AND FINAL SCORES ON THE STANFORD ACHIEVEMENT TESTS AND LORGE-THORNDIKE INTELLIGENCE TESTS. ANOTHER SECTION IS DEVOTED TO AGE-GRADE PLACEMENT ASPECTS IN A GROUP WHICH HAD NO SCHOOLING FOR A LONG PERIOD OF TIME. ALSO DESCRIBED IS A 1966 SUMMER PROGRAM. THE REPORT ENDS WITH AN EVALUATION, A SUMMARY, AND SOME CONCLUSIONS ABOUT THE PROJECT. EXTENSIVE APPENDIXES INCLUDE A HISTORICAL REVIEW OF THE SCHOOL'S CLOSING, THE EDUCATIONAL EXPERIENCE OF THE COUNTY'S NEGRO PUPILS FROM 1959 TO 1965, VARIOUS FORMS USED BY THE PROJECT, AND 20 TABLES OF TEST RESULTS. THERE IS ALSO A REVIEW OF RELATED LITERATURE AND A BIBLIOGRAPHY. (NH)

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PROGRESSIVE CHOICE READING INSTRUCTION in the PRINCE EDWARD COUNTY SCHOOL SYSTEM

(THE PRINCE EDWARD COUNTY SCHOOL PROJECT 1966-1967)

Prepared by
EDITH H. GROTBERG, Ph.D.

UD 003 565

Sponsored by a demonstration grant, VA-CAP 66-9201/1, from The Office of Economic Opportunity under Section 207 of Title IIa of The Economic Opportunity Act of 1964 and by the State of Virginia under Title I of the Elementary and Secondary Education Act, 1965 and implemented through a sub-contract with the Prince Edward Community Action Group, Inc.

THE INSTITUTE OF EDUCATIONAL RESEARCH, INC.
2900 M Street, N.W.
Washington, D.C. 20007
333-1505

Myron Woolman, PhD
Director
Edith Grotberg, PhD
Associate Director for Research
E. Robert Adkins, PhD
Director of Measurement & Evaluation

Gordon R. Carey
Executive Associate Director
Nina Small
Administrator

May 8, 1967

Mr. R. Sargent Shriver,
Director
Office of Economic Opportunity
1200 19th Street, N. W.
Washington, D. C.

Dear Mr. Shriver:

The Prince Edward County Schools Project provides an estimate of the value of a systematic but limited educational intervention in a backward rural school environment. First, it shows that when education is given a high priority by community leaders representing various segments of the population a large and complex educational project which included nearly 1,500 pupils covering all students in grades one through ten, could be mounted without difficulty even in a community where racial tensions have often run high. This project also demonstrated that joint funding by The Office of Economic Opportunity and The Office of Education could be readily worked out when local and state authorities lend intelligent and cooperative support. The project covered approximately seven school months, but included time out for testing and a transitional period of adjustment by teachers and students to the Progressive Choice Reading Programs.

Though the results over a seven month period were not spectacular they do indicate that even a limited educational effort can have considerable impact. The results indicate that there was an appreciable increase in rate of gain in reading skill as measured by The Stanford Achievement Test. The mean gain in reading for all 10 grades was .49 years for nearly one thousand students. Further, the results show that for first graders, reading gains somewhat exceeded the national average. Gains in Vocabulary scores were substantial: for the first three school grades the mean increase in vocabulary, as expressed in grade equivalents, exceeded the national norms. The mean gain for all students taking the Vocabulary test was 1.0 grade years.

Perhaps the most significant finding, however, was that the Lorge-Thorndike Intelligence Test scores (signifying capacity for comprehension and judgment) far exceeded expectancy in terms of national norms. The mean gain in IQ scores over the seven months of the project was 1.1 achievement years.

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The differences in relative gain on the various tests probably reduces to the fact that the Stanford Achievement Test involves both reading and knowledge of facts. Gains on this test were lower, in this view, since students continued to make a good many errors in selecting options because they still lacked the appropriate informational base even after they had learned to read. The greater gain in vocabulary scores and intelligence test scores is presumed to reflect the lesser dependence of these measures on a pre-existing informational base.

The data indicates that, in the main, students in a deprived rural educational environment can benefit from a supplementary program primarily aimed at the improvement of reading skills. However, it is important to state that the students in Prince Edward County leave this project at levels of skill far below the norms for their grades. The rate of learning increased, but the project was not sustained long enough to show what could be accomplished with this type of specialized instruction.

Though the seven months of organized effort, represented by this study, resulted in gains in school performance beyond expectation, there is no reason to suspect that, in the absence of further intervention, the system will continue to accelerate. It is regrettably more probable that the present forward thrust will be dissipated. This brief study, despite its promise and its gains, is expected to be of little long term value to the children or the community.

It might be useful if the reader would consider the following questions as he examines this report:

1. What would the results have been for a project spanning five times this seven month interval?
2. What would the consequences have been if instead of one or two hours of intervention such high efficiency techniques had been used throughout the entire school day?
3. What would have been the results if the teachers had been under the direct supervision of the research group for purposes of modifying classroom procedures, instituting new methods of discipline, upgrading teacher expectations of student performance, etc.?

(continued)

4. What would have been the results if specially designed programmed instructional materials were used by students throughout the school day in all areas of the curriculum over a period of several years with a teaching staff trained in the effective use of such materials and methods in a classroom context?

The fact is that this study was limited in time and materials and was pasted onto an ongoing school system with little control over the classroom process. Considered in this perspective, the results are an indication of what can be done under minimal conditions. There is no reason to doubt that these same children, given the full support of an organic interrelated curriculum and high-efficiency learning materials used over a full school day with properly trained teachers, could continue to learn at rates at or above the national norms. To do this systematically would require a full scale research effort, lasting at least five years.

The present study indicates the feasibility of a large scale research effort in a rural educational system. Ideally, such a research effort should be made in Prince Edward County. For if Prince Edward County children, who were denied schools for four full years, can overcome their handicaps so as to meet the educational standards required of our society, then what children can be lost? Such an intensive and extended research effort is long overdue and the time is now opportune.

Very cordially,

Myron Woolman

Myron Woolman, Ph. D.
Director

MW:ns

Enclosure

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ACKNOWLEDGEMENT

A project such as the Prince Edward Public School Project, 1966-1967, does not just happen. It is the result of dedication, talent, commitment, insight, and persistent hard work. Acknowledgements are made here to the persons who provided these ingredients.

I am especially indebted to Dr. Myron Woolman, who had the insight and commitment to design the project and the talent to create the materials and procedures which proved to be so effective.

Marilyn Outlaw, as Assistant Project Director, provided dedication and persistent hard work in addition to a great talent for helping people, without which the project could not have succeeded.

Paul Barth provided commitment and hard work in the daily activities of the project as well as the ability to design the Tables which are part of this report.

Margaret Barnett also provided dedication and persistent effort in distributing materials and keeping the records which added to the smooth flowing of the project.

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Then there were the dedicated persons in Prince Edward County who made the project come to life: Rev. L. Francis Griffin, Sr. and Mr. Robert Taylor, Co-Directors of the Prince Edward Community Action Group; Mr. Bryant Harper, Superintendent of The Prince Edward County Public Schools, and the principals and teachers who cooperated so fully in each aspect of the project.

Special thanks go to the Community Action Program Staff of the Office of Economic Opportunity, and the Title I staff of the Elementary and Secondary Education Act, 1965, for coordinating their efforts to fund the project.

Edith H. Grotberg, Ph. D.
Project Director

May 1, 1967

PROGRESSIVE CHOICE READING INSTRUCTION

in the

PRINCE EDWARD COUNTY SCHOOL SYSTEM

The Prince Edward School Project, 1966-1967, was sponsored by a demonstration grant No. VA-CAP 66-9201/1, from The Office of Economic Opportunity under Section 207 of Title IIa of The Economic Opportunity Act of 1964, and by the State of Virginia under Title I of The Elementary and Secondary Education Act, 1965. Specified educational aspects of the project were funded under Title I of The Elementary and Secondary Education Act, 1965. The Reverend L. Francis Griffin and Robert E. Taylor, Co-directors of the Prince Edward Community Action Group, Inc., requested the funds from The Office of Economic Opportunity. Bryant S. Harper, Superintendent of the public schools of Prince Edward County, requested Title I funds through the state of Virginia.

The Institute of Educational Research, Washington, D. C., was the organization with responsibility for carrying out the project. Myron Woolman, Ph.D., Director of The Institute of Educational Research, was Senior Research Consultant for the project. The Project Staff also included: Edith H. Grotberg, Ph.D., Project Director; Marilyn Outlaw, Assistant Project Director; Paul Barth, Field Supervisor; and Margaret Barnett, Secretary.

The project was essentially to provide a corrective reading program for all the children from Grades One through Ten in the public schools. All of these children met criteria for the educationally deprived and all but a few met criteria for socially and economically disadvantaged.

Stated in more specific terms, the Prince Edward School Project, 1966-67, was designed to:

(1) develop and improve reading and language skills for first, second and third grades;
(2) develop and improve reading and language skills for pupils from fourth through tenth grades who were educationally deprived and were reading below grade level; and
(3) provide a reading program for dropouts.

The Prince Edward County School Project, 1966-67, was an attempt to intervene totally in the reading program for all children from grades one through ten. This total intervention became necessary in part because of some learning problems unique to Prince Edward County, but more because of the total educational deprivation of the public school population. In this latter category, Prince Edward County represented a highly visible condition of the effects and implications of educational deprivation. Educational intervention, then, might demonstrate how such deprivation might be alleviated, and further, provide additional information about the learning needs and problems of educationally disadvantaged children generally.

A Background Statement

The highly visible effects of educational deprivation on the children of the Prince Edward County Public Schools were the result of: (1) the generally lower level of educational opportunities in rural, socially and economically disadvantaged communities; and (2) the closing of the public schools from 1959 to 1964 during four years of which time (1959-63) only about one third of the public school children of Prince Edward received from a minimum of six months of educational experiences to a maximum of four years in other communities and school systems.

An historical account of the events leading to the school closing and reopening is presented in Appendix A of this report. A summary of educational conditions as found in 1963 just before the Free Schools opened for the 1963-1964 school year is presented in Appendix B. Appendix B also includes a description of educational experiences provided for the children of Prince Edward County between the years 1959 and 1966.

Scope and Organization of The Report

The Prince Edward School Project, 1966-67, involved the total school population from Grade One through Grade Ten. It began in March 1966, and terminated in January 1967, for a total of six academic school months. A summer program reached forty percent of the children from Grade One through Grade Six for a period of six weeks. Sixty percent of the children who would be first graders in September, 1966, also attended the summer session in preparation for September admission to first grade.

Testing for research purposes was conducted in March, 1966; June, 1966; August, 1966; September, 1966 (for the new first graders); and in January, 1967.

The organization of the report includes a statement concerning The Progressive Choice Reading Method, followed by a section on the orientation and training of teachers and teacher aides. Next, is a section including evaluation problems and procedures. The next section presents the initiation and supervision of the reading program followed by the presentation of age-grade placement patterns in Prince Edward County. Then the testing aspects and findings are presented and analyzed, including pretests, interim tests, and posttests; and the summer, 1966 test results.

Further analysis compares students who had some education between 1959 and 1963 and those who had none, comparing them in terms of test results and gains made during the present project. Also, students who were in the 1965 Catch-Up Program and those who were not are compared in terms of results and gains made during the present project. In addition, test results and gains made by students in the summer, 1966 program are compared with students who did not attend. Similar comparisons are made between the new first graders who attended the summer, 1966 session and those who did not. The problems of attendance and dropout are presented and then a final evaluation and interpretation of the project are made.

THE PROGRESSIVE CHOICE PROGRAMMED METHOD

The Project used as its primary materials The Basal Progressive Choice[1] and The Accelerated Progressive Choice Reading Methods.[2] The theory and principles underlying the Progressive Choice (PC) Method are concerned with insuring that the learner is given information in doses which are: (1) small enough for him to swallow; (2) given at a sufficiently slow pace for him to digest; and (3) agreeable enough to be palatable and to produce real feelings of satisfaction and accomplishment. The method also is designed to provide pupils with evidence of increasing ability to reach clearly defined goals. Finally, and above all, the PC Method is designed to develop increasing independence and responsibility, based on demonstrated mastery of the materials being learned. In addition to developing reading skills, the Progressive Choice approach has been used for developing pilot skills (Woolman, 1955), missile skills (Woolman, 1960), and conceptual skills (Woolman, 1962; Holt and Valentine, 1962). The following description of The Progressive Choice Method briefly indicates the general schema.[3]

A. Sequential Organization

The body of information to be learned is broken down into discrete elements which are then organized into a sequence based on the following criteria:

(1) The learner is responsible for mastering only one new learning unit at any given time.

(2) Each successive unit to be learned is as dissimilar as possible from the one preceding it.

(3) The learner must demonstrate that he can integrate the unit he is learning with all previously learned units.

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[1] Myron Woolman, Lift-Off to Reading, Science Research Associates, Chicago, Illinois, 1966.

[2] Myron Woolman, Reading in High Gear, Science Research Associates, Chicago, Illinois, 1964.

[3] See also Myron Woolman, The Progressive Choice Reading Method, The Institute of Educational Research, Washington, D.C., 1965.

B. Functional Requirements

(1) Each unit to be learned should add to the learner's skill in meeting both the overall and specific objectives of the program.

(2) At any given time, what is learned should be perceived by the learner as being functionally useful.

(3) Each successive unit is of a positive nature. The learner learns only material he can use; negative information, such as why alternative procedures are wrong, is avoided.

C. Informational Requirements

(1) The learner must always know his precise status in the program and be informed as to the relevancy and correctness of his responses immediately.

(2) The information and content of the initial body of material is designed to appeal to the needs, interests and values of the typical child. However, after the learner experiences success in the program, the content of the material is gradually shifted to provide him with the techniques, language and skills necessary to effectively function on completion of the program.

D. Motivational Inputs

(1) The program is designed initially to be consistent with the fundamental needs, interests and values of the learning population.

(2) The program specifies the goals and sub-goals to be met and continuously informs the learner as to his degree of success in meeting the goals.

(3) Progress is based on demonstrated mastery. As the learner moves through the program, he becomes increasingly independent.

(4) Progress in the program results in increased responsibility and authority. As he moves through the program, each learner increasingly participates in the instruction of others who have not yet reached his level of achievement.

E. The Expanding Field of Choice

The Progressive Choice Method is designed so that at the outset there is very little possibility of making incorrect choices. The learner achieves success at any given point in the program by making a choice which is appropriate for the particular context. As the learner demonstrates his ability to make consistently successful choices, he is given new information to learn. Thus, at the beginning of the program, there is a very limited field of choice (to reduce the probability of error), but at the end of the program, there is almost limitless choice. As learning proceeds, the number of possible choices increases on the basis of demonstrated proficiency. The learner theoretically continues to respond with a very high probability of success, even when the program increases in complexity so that the number of possible errors has increased astronomically. Thus, The Progressive Choice Method reduces to a system of continually assuring that a learner masters the possible choices at a given level before imposing the requirement that he learn another unit of information. Ultimately, he must demonstrate that he can successfully make appropriate and meaningful choices at the greatest level of complexity contained in the program. At this point, he has satisfied the original program objectives.

ORIENTATION AND TRAINING

While the reading materials are highly self instructional or may be taught by a person following the Teacher's Manual, some instructor training is desirable. The teachers and teacher aides received fifteen hours of training in use of the materials and had continuous supervision from the project staff. The project began officially with the training of the teachers and teacher aides.

Twenty-eight teachers and nineteen aides who were part of the school project were trained in the use of The Progressive Choice instructional materials by the Assistant Project Director, according to the following schedules:

March 4, 7-10 p.m. - Orientation to the Project (including introductory statements by Project Director and Superintendent of Schools).

March 5, 9-12 noon - Demonstration using instructor-Training workbooks.

March 7, 7-10 p.m. - Explanation of special training materials and their relation to actual materials. General structure and philosophy of the program.

March 8, 7-10 p.m. - Role playing by teachers using actual materials. Each teacher and aide was given an opportunity to teach, using the Instructor's Manual while others performed exercises in workbooks.

March 9, 7-10 p.m. - Discussion and summarizations.

The instructional materials included the following:

The Basal Progressive Choice Reading Method Instructor's Manuals and Learner's Workbooks for:

Cycle I - Segments 1 - 10
Cycle II - Segments 1 - 5
Cycle III - Segments 1 - 5

The _Accelerated Progressive Choice Reading Method_ Instructor's Manuals and Learner's Workbooks for:

Cycle I - Segments 1 - 10
Cycle II - Segments 1 - 5
Cycle III - Segments 1 - 5
Vocabulary Expansion Program (18 booklets)
Program Supplementary Materials (Dictionaries, Special Stories, Driver Training, etc.)

In addition to training in use of the materials, on March 5, from 1 - 4 p.m., teachers received orientation to the data collection techniques and instruments. This training was given by the Field Supervisor.

Aides were assigned to each teacher using the materials. The purpose for having aides was to reduce the number of pupils to a teacher and to provide help for special problems. Further, since the materials encourage individual rate of progress, aides were helpful in assisting with individual needs.

EVALUATION PROBLEMS AND PROCEDURES

Problems of Measurement and Evaluation

Evaluating the effects of the project was complicated by a number of factors. First, standard evaluation instruments such as the Stanford Achievement Tests are constructed and normalized for use in typical school situations. The Prince Edward school situation was not typical both because of the four year school closing and because Prince Edward is a disadvantaged rural community.

It was necessary to use the Grade Level Equivalent instead of IQ score for many children because their reading level required the use of a lower Lorge-Thorndike Test Level which did not have standardized IQ conversions for their ages. The Non-Verbal Grade Equivalent of the Lorge-Thorndike Intelligence Tests, then became the single reliable measure with which to compare and contrast age groups and experience groups in terms of intellectual functioning.

Though it is possible to measure certain kinds of changes, the language, mode of response and the content of the test items are maladapted and inadequate for evaluating the changes taking place when children who tend to speak in a rural dialect learn to read. Though they could learn to read and master the vocabulary in the program, they would still lack the language to respond to test items which used a less restricted vocabulary. Conversely, these tests provide a genuine measure of reading skill only when the vocabulary pre-exists. The changes in score under these circumstances represent a measure of the change in ability to decode the print into an already known speech code. Under these conditions standard tests reflect only a portion of the gains which take place.

Justification for Use of Standard Tests

Despite the strong expectation that scores on standardized tests would reflect an underestimate of achievement, they were desirable for a number of reasons:

(1) They provide a method by which test performance can be compared to performance in a population representative of the society at large. Further, for learners who could read, these scores would provide an index of cultural differences between Prince Edward County children and those in the society at large.

(2) Standard tests such as the Stanford Achievement Tests and the Lorge-Thorndike Intelligence Tests are currently available measuring instruments for immediate use.

(3) Above all, they provide an objective system of scoring in which the biases and personal involvement (positive or negative) of evaluators can be largely ruled out. This is highly important as it provides a counterbalance which tends to offset subjective involvement whether positive or negative.

The Stanford Achievement Tests

These tests were selected because they are basic and well standardized tests of achievement which include the following subtests used in the project:

(1) Word Meaning (WM)
(2) Paragraph Meaning (PM)
(3) Vocabulary (V)
(4) Arithmetic (A)

The WM, PM and V subtests permit a direct evaluation of gains in selected factors involved in the reading process. The Arithmetic (A) subtest provides an evaluation of the effects of the program on items which emphasize comprehension and task involvement. In addition it offers an opportunity to estimate whether there was any transfer value from the reading program in an academic area which requires comprehension and judgment. However, these effects are demonstrable only when computational skills preexist.

As with other standard tests the Stanford Achievement Tests provide several comparable alternate forms. Pre- and post-Stanford Achievement Tests of roughly equivalent difficulty may be given in which each item differs from the previous test. Further, the Stanford Achievement Tests permit machine scoring, thus increasing the speed at which tests may be scored and analyzed. This feature, however, required the older pupils to respond to an answer sheet rather than on the test itself. This further complicates the test-taking task by requiring the recall of the item number and options on the test form (a, b, c, d, or e) as the examinee shuttles from each test item to the answer sheet and back. For the primary children, the tests were marked directly and key punched from the markings.

The Lorge-Thorndike Intelligence Tests

This is a highly regarded test suited to mass use for objectively evaluating complex human performance. It consists of two tests - Non-Verbal and Verbal. The Non-Verbal test is concerned largely with the ability to perceive and differentiate between subtle details contained in both realistic and abstracted forms. The Verbal test requires the examinee to read items carefully, to abstract the meaning and to carefully select from among options the one which is the most meaningful and reasonable for the context of the item.

The Lorge-Thorndike Intelligence Tests provide carefully designed, subtle, challenging and demanding tasks which insistently pose the requirement that the examinee mobilize himself fully to interpret and respond selectively to the context of the problem. This test was viewed as vitally important as it offered the best measure of the functional value of the project. The examinee's speaking vocabulary is less important than in the Stanford Achievement Tests, but sensitivity to the intent of the item and comprehension are the most important considerations. The Lorge-Thorndike Intelligence Tests appeared to offer the best means of assessing how much the project contributed to ability to comprehend and interpret fairly complex tasks requiring the use of judgment. However, a number of problems developed because of the large number of Prince Edward children who were overage for grade placement and could not read the test level consistent with the chronological age limitations.

In The Technical Manual for Administrators, Directors of Testing and Research, the authors of the Lorge-Thorndike Intelligence Tests list the grades at which each of the five levels of the test is most appropriate. These are for a typical community:

Level 1	Kindergarten and Grade 1
Level 2	Grades 2 - 3
Level 3	Grades 4 - 6
Level 4	Grades 7 - 9
Level 5	Grades 10 - 12

For communities where it is expected that the average IQ will be below 90, it is recommended that lower test levels be used in the higher grades. It was thus seen as desirable to use the test levels in Prince Edward County as follows:

Level 1	Grades 1 - 2
Level 2	Grades 3 - 4
Level 3	Grades 5 - 6
Level 4	Grades 7 - 10

These adjustments were made in order to permit more accurate appraisal of this special population of children with depressed abilities. Upon examining initial data, however, it became clear that in the conversion tables no allowance had been made for older children taking the lower level tests. The recommendations were based upon the premise that children are grouped chronologically and, further, that the largest deviation from normal age-grade placement that could be expected would be 1 - 2 years. This was not the situation at Prince Edward. (See below, Age-Grade Placement). Over half of the children were overage for grade placement and many were over the ceiling of the IQ conversions on the Lorge-Thorndike.

It was clear that intelligence quotients for this group would not be generally valid. However, norms are provided by the publisher of the Lorge-Thorndike for Grade Equivalents. This expression of children's ability was determined to be most meaningful for this study. Further, the Non-Verbal Grade Equivalent score was the single reliable measurement, since Level I has no Verbal portion and many of the older children could only handle Level I. The Non-Verbal Grade Equivalent score occurs at all levels and is not restricted by chronological age. Thus, the Grade Equivalent score became the measurement used for data analysis and interpretation.

Testing

Tests were administered to each student by the teachers in the program and under the supervision of the Project staff. Initial testing began March 7 and terminated March 10. The following tests were administered for designated grades:

1. Lorge-Thorndike Intelligence Tests

Level 1	Grades 1 - 2	(330 N)
2	Grades 3 - 4	(401 N)
3	Grades 5 - 6	(219 N)
4	Grades 7 - 10	(315 N)

2. Stanford Achievement Tests

Primary Battery I — Grades 1 - 3 — Students: 535

- Word Meaning
- Paragraph Meaning
- Vocabulary
- Arithmetic

Primary Battery II — Grades 4 - 6 — Students: 415

- Word Meaning
- Paragraph Meaning
- Arithmetic

Intermediate Battery I — Grades 7 - 10 — Students: 315

- Word Meaning
- Paragraph Meaning
- Arithmetic

In addition to standardized tests, tests designed by IER were administered. These tests are important for determining the level of progress and achievement of the pupils and the evaluation of the teachers concerning pupil attitudes and participation in the project. The additional tests administered were:

1. Progressive Choice Marginal Diagnostic
2. Social Effectiveness Evaluation Form (SEEF)

The Diagnostic Test was administered at the time of administering the standardized tests. The SEEF was distributed to the teachers the second week of the project and returned within three days.

Interim tests were administered from May 31 through June 3, 1966, at the end of the academic school year. The students had been in the program for two months. Form Y of the SAT was used. Only the SAT and the Lorge-Thorndike Tests were administered on these dates.

On August 15 and 16, 1966, two subtests of the SAT -- Word Meaning and Paragraph Meaning were administered to the students from grades one through six who attended the summer session. The summer program reached forty percent of the students in the first six grades.

New first graders were tested with the complete battery of tests in September.

Final tests were administered January 25 - 27, 1967, to the population which had been in the program since March, 1966, except the tenth grade class which left the program in June, 1966. These tenth graders became eleventh graders in September, 1966, and were no longer part of the program. Final testing, then, was conducted with children who had been in grades one through nine in March, 1966, and who were in grades two through ten in January, 1967. The same tests and levels were used in the final testing as in the initial testing. The new first graders as of September, 1966,were tested in January, 1967, but their test results are treated separately.

THE FUNCTIONING PROGRAM

Use of The Materials

The Progressive Choice materials were introduced into the classrooms of the Prince Edward County schools upon the completion of pretesting in each school. The Basal Progressive Choice Reading Program was used in grades one through three for two hours per day. The Accelerated Progressive Choice Reading Program was used in grades four through six for two hours per day and in grades seven through ten for one hour per day.

Support Visits

During the first two weeks of the project a series of brief visits were made to all classrooms. Teachers were told that these visits were to be solely for the purpose of providing support as the program got underway. Ten to twenty minutes were spent in each classroom with the schedule arranged so that teachers could be seen either before classes began or at the end of the hour. At this time their questions were answered and the relationship with the project staff established. No formal evaluations were made in this period. However, the project staff identified the varying needs of the teachers and aides and organized observation visits accordingly.

Observation Visits

Frequency and duration of classroom visits were set up on the basis of the informal evaluations. When the teachers and aides seemed secure with the materials and procedures, observation visits were made on a regularly scheduled basis.

The teachers were rated by the observer on a five-point scale in the six categories described below. (The Observation Visit Report Form appears as Appendix C.)

A. General attitude. The observer rated the attitude of the teacher toward teaching the Progressive Choice Reading Method. Ratings were made on the basis of teacher performance during the class period and not according to statements made at the time of a visit or prior to that time.

B. Class performance rate. Observers noted students' oral responses and workbook performance in order to determine whether progress was being made at an expected rate; much slower than expected; or much faster than expected.

C. Use of materials. This category concerned the appropriate use of the materials, e.g. use of the instructor's manual, teaching oral exercises, and writing letter shapes.

D. Performance of aides. Aides were evaluated on the use of the materials and the effectiveness of their performance in assisting the teachers.

E. The classroom. The classroom itself was also evaluated in terms of order, discipline, grouping and effective reading displays.

F. Special problems. Evaluative comparisons were made concerning the number and kind of special problems in the classroom. These would include ordering materials, being alert to individual needs, disruptions, etc.

Conferences with teachers followed the observation visit to discuss the evaluation.

Group Meetings

Several short meetings were held with teachers at each school to supplement observation visits. These meetings were for the purpose of discussing such common problems as ability grouping, grading (in the elementary grades) and student assistants and teacher aides. Briefly, the nature of these problems was as follows:

Grouping - At the beginning of the program, a number of the older students indicated they had already been through the program as participants in the Summer Catch-Up Program, 1965. Special use of the materials would be needed for these and for others whom teachers felt could move very quickly through the program. However, it was felt best that this not be done during the first report period, (March 7 - 31), in order to permit teachers to observe for themselves the students' use of the first few segments. As was expected, some of those who said they knew the material were not always among the fastest moving, but there were many who could be moving at a much faster rate. In addition, there were some children in several classes who had very low IQ's and for whom The Accelerated Progressive Choice materials seemed to be too fast paced. After consulting with the Project Director, it was decided that these slower children would be placed in the Basal Progressive Choice materials at the segment in which they were currently working. For the accelerated students a special program was devised. They would proceed immediately to Cycle II of the APC and spend part of the class time doing section check outs. The remainder of class time would be devoted to Cycle III, Segment 3 (dictionary) and the Vocabulary Expansion Program when students passed the Cycle II and III Check Out tests.

Grading - Standard grading procedures in the elementary grades were not applicable to the program. Teachers were concerned about this, not wanting to penalize those who had not been in the summer program. It was discussed and decided that grades would be based on an average of the progress and attitude ratings given on the IER Monthly Progress Report. The numerical values could be readily translated into letter grades for home reports. The high school classes received no credit for the reading course.

The Monthly Progress Report (Appendix D .)

A Monthly Progress Report form was distributed to each teacher. On it the teacher recorded the following information:

Teacher
School
Grade
Names of pupils
Attendance of pupils
Location in materials
Evaluation of pupils' progress and attitude

The completed report was turned over to Project staff at the beginning of each month. These reports helped the staff evaluate the progress of the program and make necessary changes in directing the program.

Teacher Aides and Student Assistants

The teachers used the aides to do whatever was necessary to free them to do their best work. They were told some ways that aides might best assist them (e.g., catching up absentees, working with special problems, etc.). As defined ability groups began to emerge, the teachers found the aides invaluable and at this time student assistants were also able to be utilized. Students who had passed the Cycle II Check Out were brought in to give exercises and reviews, when necessary. These students continued in their own work and used free time to assist others. At Moton High where there were no teacher aides, students were used from the beginning to assist reading teachers. Teachers were, however, cautioned against becoming too dependent upon assistants, as this might tend to discourage internal group dynamics.

Additional training was needed for teachers and teacher aides who were new during the summer program. (See Summer Program, 1966). Meetings were also scheduled for training of teachers and teacher aides who were new to the program in September. In addition, meetings were held with the teachers and teacher aides who had been in the program the previous semester so that they might determine who their new students would be and where the students were in the reading program.

The very late organization of classes in the fall semester held back the continuation of the program until the last week of September. The total time for the reading program was six months of the school year with an additional month and one half for the forty percent of students from grades one through six who attended the summer program, 1966.

AGE-GRADE PLACEMENT OF PRINCE EDWARD STUDENT POPULATION

One of the most striking aspects of the Prince Edward County public schools was the age-grade placement. An examination of age-grade placement in March, 1966, revealed that the average child was overage for his grade. (See Figure 1) While the mean age for children in both the first and second grades was relatively close to the expected mean, both grade levels showed a wide age range. By third grade and continuing from third through tenth grade, the mean age was high except for seventh grade. Seventh grade is the first year of junior high school and apparently the better students were promoted into junior high while the less able were held in elementary school. The mean ages for the sixth and seventh grades were approximately the same. Further, the maximum ages for children in grades three through seven approximated one another.

It was hypothesized, that the closing of schools for four years created the atypical situation. To test this hypothesis, it was necessary to know: (1) the age-grade placement in Prince Edward before the schools were closed; and (2) the pattern of age-grade placement on a national basis.

Green (1964) provided the first data. He determined that 20% of the children were overage for their grade placement in 1959. (p. 136).

Green's findings were consistent with national data. Charles B. Nam (1965), reporting on the educational status of rural youth, utilized national census data to determine "what proportion of students of a given age are attending the grade normal for that age". Using the 1960 census data, the following percentages of children who were overage for grade placement were found:

Age	Percentage Overage for Grade Placement
8 - 13 years old	17.2
14 - 15 years old	30.3
16 - 17 years old	23.7

Green and Nam provide a basis for analysis of the Prince Edward data.

During the Free Schools in Prince Edward County, 1963-1964, children were grouped according to age, not by achievement scores. At the end of the Free Schools, teachers assigned children to

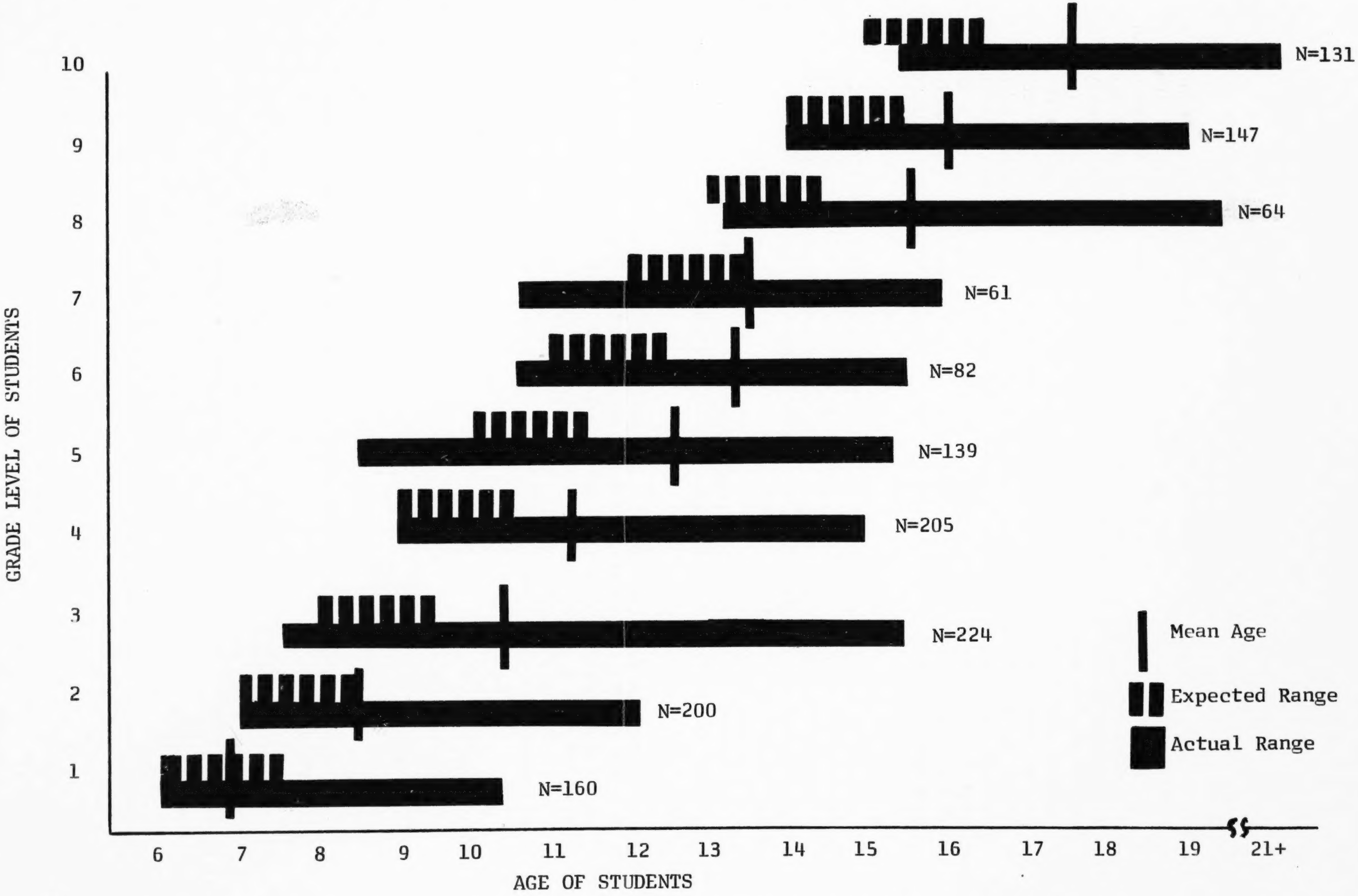

Fig. 1 A comparison of Age Ranges and Mean Age at each Grade Level in Prince Edward C[illegible]y w[illegible] ex[illegible]ted [illegible]rms

grade levels on the basis of achievement scores and their own evaluations. Gordon (1964) reported on the age-grade placement at the end of the Free Schools. He introduced the additional variables of Education and No Education in his description of age-grade placement, i.e., children who did or did not have educational experience during the school closing. Gordon's findings are presented below:

Age-Grade Placement at the End of Free Schools, 1964

	Total Students	Number at Age-Grade Placement	Percentage at Age-Grade Placement
School A No Education	302	56	18.5
School B No Education	381	73	19.2
Students with Education from Schools A and B	107	41	38.3

Gordon's findings show that at the close of the Free Schools, of the children who had no education while the public schools were closed, only 18.5% of the children from School A and 19.2% from School B were within the expected age-grade placement; while 38.3% of the children from these same schools who had some education during the same period were within the expected grade levels. In short, more children who had no education were overage for their grade placement than children who had some education. However, the percentages of children at proper age-grade placement are significantly below the national norms. Taken as a whole only 22 percent of the children were at the appropriate age-grade placement at the end of the Free Schools. As will be seen immediately below, these percentages were consistent with the situation in March, 1966.

The percentages of pupils at the appropriate age-grade placement in March, 1966 are presented in Figure 2. These percentages are shown only for grades three through ten since the age-grade placement disparity in terms of the mean was most significant at these grades. It should be noted that appropriate age-grade relationship was adjusted to be consistent with expected age-grade placement for March of a school year, and that a range of 1½ chronological years is considered to be normal within any given grade.

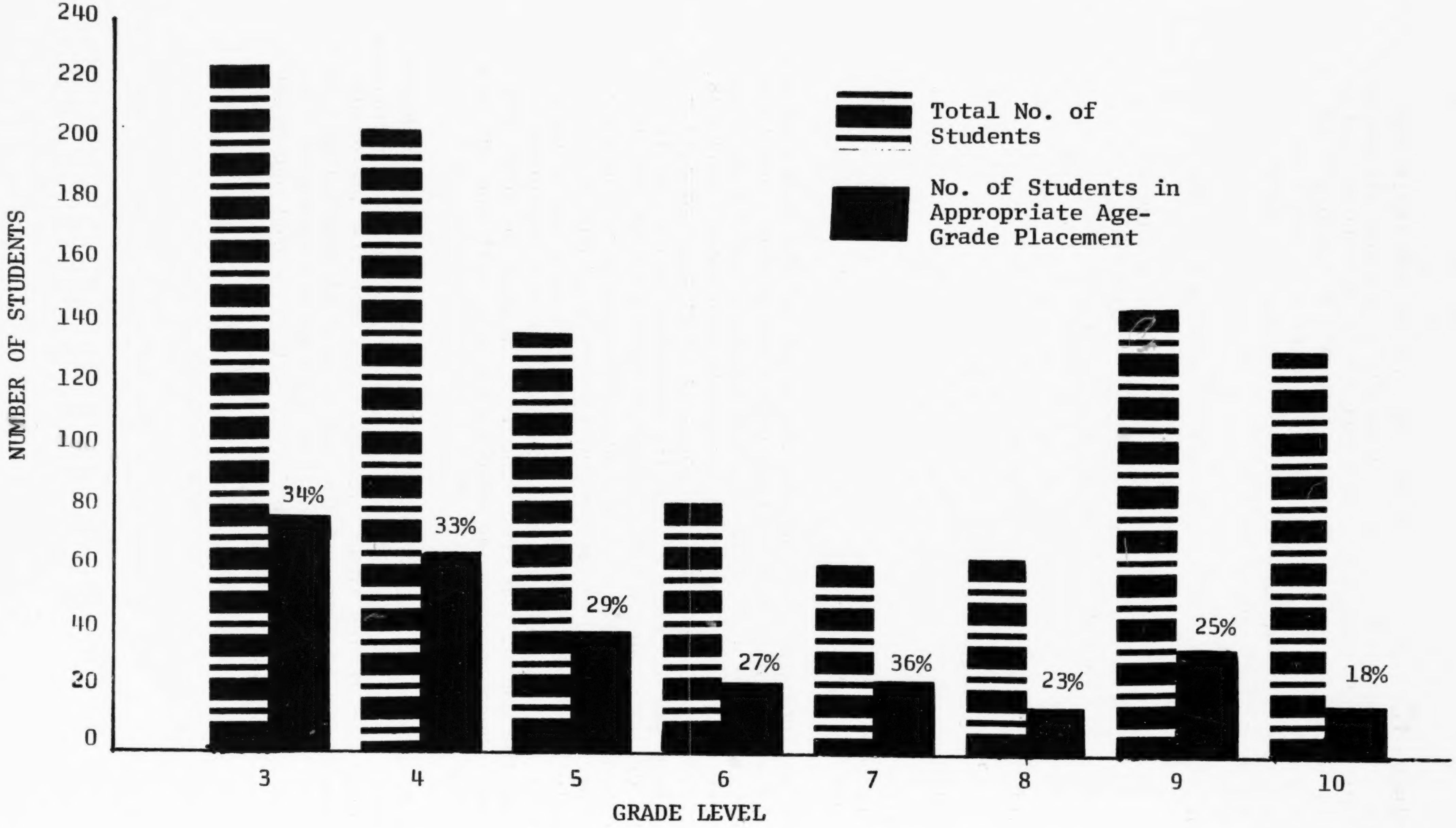

Fig. 2 Students in Appropriate Age-Grade Placement compared with total enrollment by grade for March, 1966.

Roughly 30% of the Prince Edward pupils reflected in Figure 3 were within an appropriate age-grade placement in March, 1966. Approximately 70% of the students were overage. (Only 8 were underage for grades three through ten.) This overage pattern is consistent with Gordon's findings. It will be observed that the percentage of pupils within appropriate grade placement and the percentage of overage pupils are nearly reversed when compared to the data provided by Green and Nam. Before the schools closed, the pupils were overage with no greater frequency than that which was consistent with national norms. When the Free Schools operated and the public schools reopened and continued, the children were, and continued to be, grossly overage for grade placement. It may be assumed that the closing of the schools was responsible for this condition.

In addition, it is clear from examining Figure 3 that the children who were at appropriate age-grade placement were not achieving according to grade expectations. While the achievement scores of these children were somewhat higher than the average scores in Prince Edward for grade levels regardless of age, the levels were still below expected grade norms. Thus, the situation in Prince Edward County Public Schools between June, 1964, and March, 1966, was one of overaged children in each grade. Further, the children who were at appropriate age-grade placement were behind national norms. The only exception was the six year olds at the end of the first grade in 1964. They had achieved according to age-grade expectations during the Free Schools. These six year olds were in third grade in March, 1966. According to Figure 3, the third graders who were at appropriate age-grade placement scored at approximately 2.5 grade years on the SAT rather than the expected 3.6. Their average reading scores were not inconsistent with the amount of relative retardation of the fourth and fifth grades. In other words, their achievement at expected rates in 1964 was lost by 1966.

While the achievement rates of disadvantaged children are generally behind other children, the Prince Edward situation seemed compounded both by the fact that the schools had been closed as well as by the fact that many older children were in the lower grades.

An examination of achievement scores of the older children in the lower grades provided further information pertinent to the effects of overage grade placement. The insert in Figure 4 has data on Word Meaning and Paragraph Meaning scores for 13 to 15 year olds who were placed in third, fourth, fifth and sixth grades.

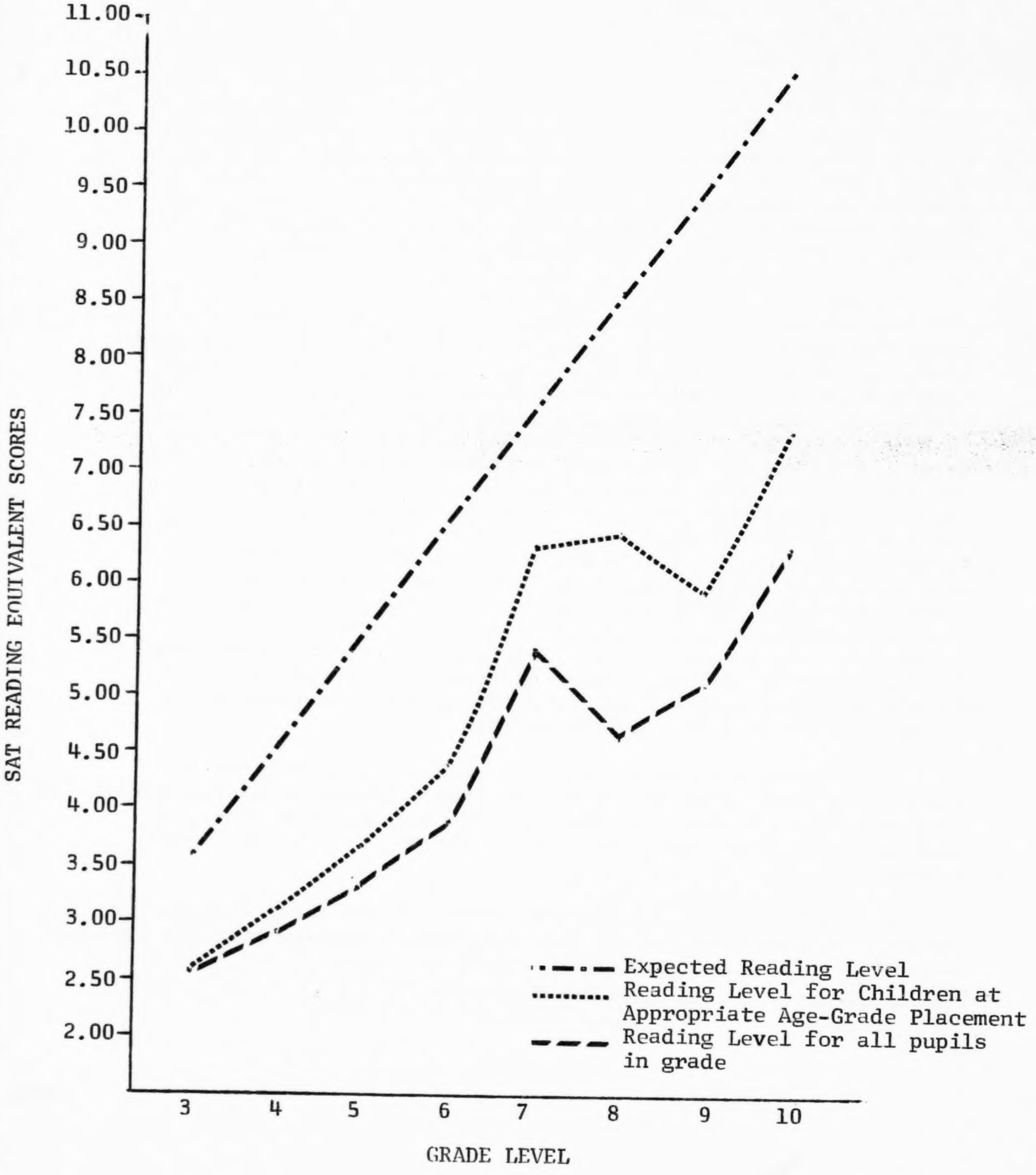

Fig. 3 Comparison of SAT Reading Average $\left(\frac{WM + PM}{2}\right)$ for all Prince Edward students in grades 3 through 10 and for those within appropriate Age-Grade Placement with expected Reading Average as of March, 1966.

Figure 4 also presents data on Word Meaning and Paragraph Meaning scores for the 14 to 21 year olds in grades seven through ten.

As Figures 3 and 4 indicate, the children who were at appropriate age-grade placement had low achievement scores and the children who were overaged for grade placement had even lower achievement scores. There is a strong possibility that the grade placement pattern of Prince Edward schools tended to depress the total achievement of all the students. This situation affected the reading program in terms of testing and materials as well as in interpretation of the test results. The implications of such a situation for curriculum development and planning are far reaching.

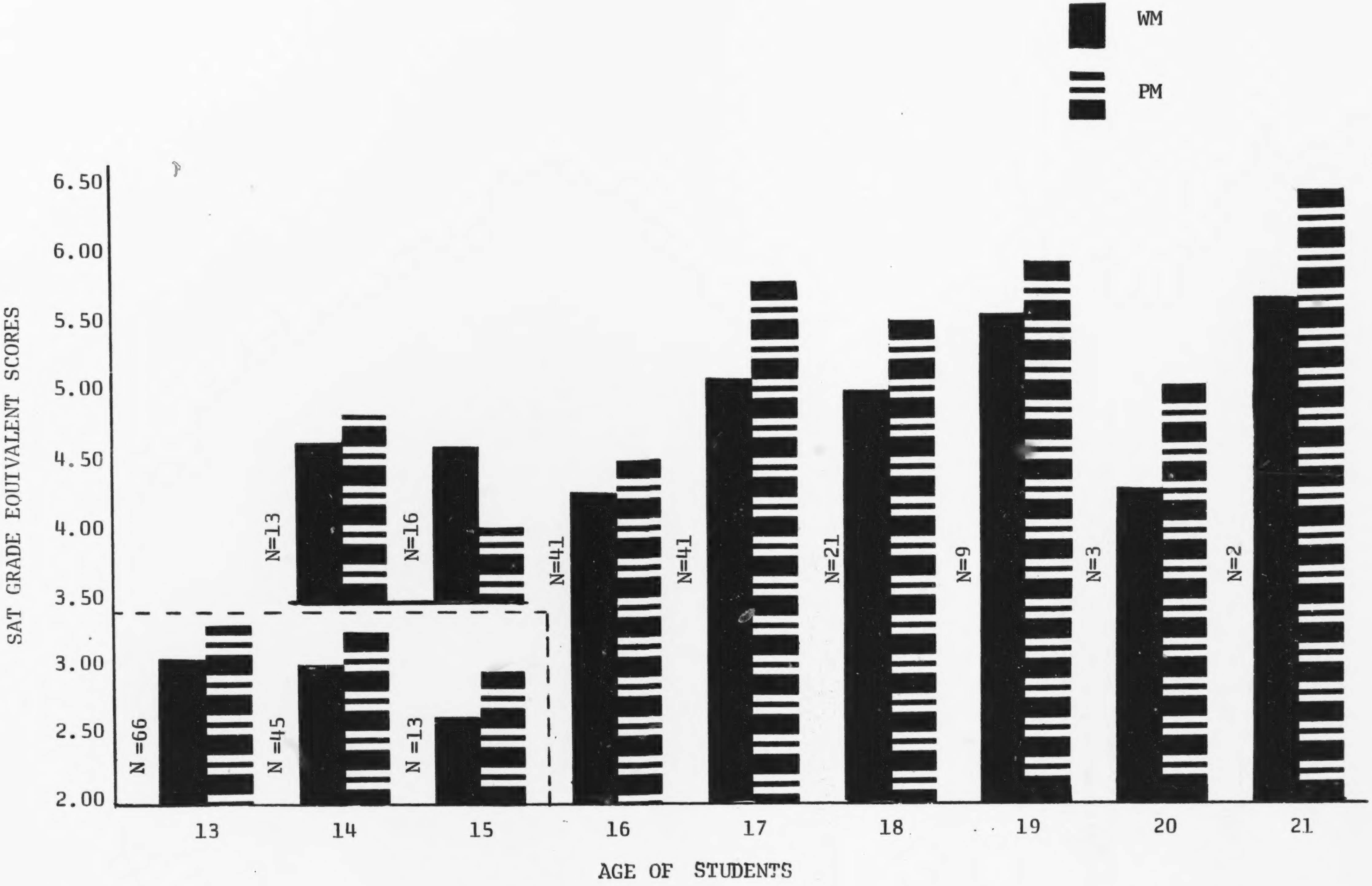

Fig. 4 A comparison of SAT Wording Meaning (WM) and Paragraph Meaning (PM) scores for students aged 13 through 15 in grades 3 through 6 (Insert) and for students aged 14 through 21 in grades 7 through 10.

TEST RESULTS

Gains After 10 Weeks

Students from grade one through grade ten were given pretests on the Stanford Achievement Tests, and the Lorge-Thorndike Intelligence Tests, between March 7 and 10, 1966 as described above. The interim tests were administered between May 31 and June 3, 1966. An alternate form of the SAT was used for the interim testing. The students had ten weeks in this phase of the program and the following discussion of gain scores reflects only this 10 week interval. The mean number of hours of instruction was 85 for students in grades one through six and 42 for grades seven through ten. The Interim results are shown in Table I (Appendix E).

Interim Word Meaning Scores

On matched tests (See Table I, Appendix E) 1,134 students made an average gain of .17 on Word Meaning of the SAT. The range of gains for the grades was from a loss of.02 in third grade to a .73 gain in years at seventh grade.

Higher mean gains were made by students in grades five through ten than in the lower grades, with the exception of grade one where students gained .22 grade years. The upper grades fell below national norms for achievement to a greater extent than did the lower grades and yet made greater gains during the reading program. The reading program apparently was helping to close the gap created by the period of educational deprivation. The first graders gained sizably even though they scored nearer to grade expectation at the beginning of the reading program. Part of the explanation for this may be that the first grade was not comprised of a majority of older children as were the second through fourth grades. More will appear on the overage problem below.

Interim Paragraph Meaning Scores

On Paragraph Meaning, 1,141 matched tests showed an average gain of .05 with a range from a loss of .28 at the tenth grade to a mean gain of .33 at the seventh grade.

The variation of mean gains among the grades has no clear pattern. The losses at grade nine and ten would appear to be related to test factors. The pretest, March, 1966, scores show a consistently higher score for Paragraph Meaning than for Word Meaning. The greater gains in Word Meaning may well be attributed to the fact that the reading program tended to close the gap between the two achievement subtests.

On the SAT Arithmetic subtest (Primary Battery I), Arithmetic Concepts subtest (Primary Battery II) and Arithmetic Applications (Intermediate Battery I) the average gain for 987 matched pupils was .01 with a range from -.32 at the tenth grade to a mean gain of .30 at the first grade.

Sizable mean gains on the Arithmetic subtest occurred in grades one, two, and four, while all the other grades showed losses or insignificant gains. There may be little carry over from reading to arithmetic in the higher grades. The gains in the first, second and fourth grades may be more readily attributed to transfer from the reading program. It can be noted, that the initial scores for the Arithmetic subtests are generally higher than for the reading subtests.

Interim Lorge-Thorndike Scores

The Lorge-Thorndike mean gains for both the Verbal (.41) and Non-Verbal (.60) sections are striking for several reasons. First, the pretest Grade Equivalent scores are generally higher from third grade and above than either of the reading scores or the arithmetic scores. Second, the mean gains over the ten week period are almost twice the national rate of gain and are significantly higher than the mean gain on any subtest of the Stanford Achievement Tests.

Final Test Results (Table II, Appendix E)

Posttests were administered January 25-27, 1967. The students averaged fifteen additional weeks in the program for a total of approximately 25 weeks. In terms of hours, the students who were in grades one through six in March, 1966, averaged 140 additional hours, while the students in grades seven through ten (as of March, 1966), averaged 70 hours with the exception of the tenth graders who left the program in June when they became eleventh graders. Students who became first graders in September, 1966, are not included here but are treated separately below. The Summer Program, 1966, is also discussed below, both separately and as it affected the total program.

On matched tests (Table 1) , 949 students made an average gain of .49 on Word Meaning of the SAT. The range of gains for the grades was from .29 mean gain for the third graders to .77 mean gain for the fifth graders. More than half a year mean gain

Table 1

Grade	N	Word Meaning	N	Paragraph Meaning	N	Vocab- ulary	N	Arith- metic
1	117	.41	120	.58	122	.58	122	.60
2	143	.48	144	.46	143	.58	144	.41
3	169	.29	171	.41	146	1.78	169	.62
4	169	.53	169	.54	-	-	63	.35
5	100	.77	100	.93	-	-	38	.58
6	73	.60	73	.38	-	-	49	.31
7	53	.52	53	.40	-	-	53	.20
8	46	.47	46	.55	-	-	46	.07
9	79	.37	79	.17	-	-	77	.33
Total	949	.49	955	.49	411	1.00	761	.38

Final SAT Grade Equivalent Matched Gain Scores by Grade

Table 2

Grade	N	Verbal	N	Non- Verbal
1	-	-	100	.89
2	-	-	133	1.28
3	-	-	169	1.47
4	-	-	161	1.25
5	95	1.46	95	1.95
6	39	1.08	39	.72
7	51	.25	51	.82
8	44	.85	44	.98
9	72	.61	72	.97
Total	301	.85	864	1.14

Final Lorge-Thorndike Grade Equivalent Matched Gain Scores by Grade was made by grades four, five, six, and seven. The smallest gains were made by grades three and nine. Grade levels were as of March, 1966.

Grades four through six made the greatest gains in WM. These students were in the program two hours per day and were using the accelerated materials. The students in grades seven through nine were in the program only one hour a day, using the accelerated materials. However, their gains were as high as the gains made by the primary grades, who were in the program two hours a day. The BPC program which takes longer to complete than the advanced materials were used by the primary grades and may explain the smaller gains.

On matched tests (Table 1), 955 students made an average gain of .49 in Paragraph Meaning on the SAT. The range of gains was from .17 for the ninth grade to .93 mean gain in years for the fifth graders. More than half a year mean gain was made by grades one, four, five, and eight. The smallest gains were made by grades nine and six. The students in grade nine consistently tested higher in Paragraph Meaning than in Word Meaning and their final scores in Paragraph Meaning are higher than in Word Meaning even though the mean gain is smaller. For grades one, three, five and eight, the final grades in Paragraph Meaning are higher than in Word Meaning and the gains are also higher. Grade six demonstrates the only instance where Word Meaning final scores are higher than Paragraph Meaning and the mean gain for Word Meaning is also higher. Generally, Paragraph Meaning scores are higher than Word Meaning scores, and while the overall gains for both subtests are the same, the dominant pattern seems to show that greater gains are associated with higher pre- and post scores..

On the Arithmetic test the 761 matched students made a mean gain of .38 years. The range of gains was from .07 for the eighth graders to .62 mean gain in years for the third graders. The high gain of the third graders contrasts with their lower gains in the reading subtests. Mean gains of more than half a year were made by grades one, three, and five. The lowest gains were made by grades seven and eight.

The pattern of losses in Arithmetic scores observed in the interim data for the higher grades and noted in Green's study disappeared. However, the higher grades made the smallest mean gains. Again, as with the initially higher Arithmetic scores, the final Arithmetic scores are generally higher than for the reading subtests.

The Vocabulary test of SAT was administered to the first three grades and provided matched gains on 411 students. The mean gain on the test for all three grades combined was 1.00. The third graders gained 1.78 years in Vocabulary. This gain of nearly two years for the third grade students is of special interest as there were a substantial number of overage, underachieving students in the third grade. It should be noted that the pretest mean of all third grade students was lower than that of the second grade students and that the posttest increase was substantially greater.

The Verbal Grade Equivalent score on the Lorge-Thorndike Test was available only for grades five through nine. The mean gain for 301 matched students was .85, with a range from .25 at the seventh grade to 1.46 at the fifth grade. The small gains of the seventh graders are offset by their higher Grade Equivalent scores. In fact, all of the Lorge-Thorndike Grade Equivalent Verbal scores are higher at each grade tested than the SAT scores.

The Non-Verbal Grade Equivalent scores were obtained for all grades 1 through 10. A mean gain of 1.14 was made by the 864 matched students with a range from .72 for the sixth graders to 1.94 for the fifth graders. The final Lorge-Thorndike Grade Equivalent scores are higher in all cases than any SAT subtest.

The very large differences between the Non-Verbal Grade Equivalent scores and the achievement scores in the SAT suggest that the students have greater intellectual apptitude than was being used in the classroom. Further, as a consequence of the reading program this intellectual potential was significantly increased.

Analysis by Age

The large number of overage children in terms of grade placement suggests that achievement scores and mean gain scores might be more meaningful when examined in terms of age rather than grade.

Interim test results. (Table III, Appendix E). The data were regrouped according to age rather than grade in order to eliminate the effects of the age-grade placement peculiar to Prince Edward County. Table III presents the pre-, interim and gain scores on the Stanford Achievement Tests and the Lorge-Thorndike.

Examination of the interim data organized by age shows that in Word Meaning, the larger gains were made by the six, twelve, thirteen, fifteen, eighteen and nineteen and older groups. Less gains occur for the seven through eleven group and the fourteen, sixteen and seventeen-year-olds.

Examining the Paragraph Meaning subtest, gains for ages six through ten are approximately equal. The largest gains occurred in the twelve and thirteen year olds. Losses appear for ages fourteen and above.

The mean gains in the Arithmetic subtest show the greatest gains occurring among six, seven, and nine-year-olds.

The twelve and thirteen-year-olds made the largest mean gains in the reading tests and the seven-year-olds in the Arithmetic test. The seven-year-olds had very likely been less affected by the cumulative factor of educational disadvantage. The twelve and thirteen-year-olds were often those children who did not attend school until they were nine or ten years old, thus having missed the first three or four years when they should have been receiving education.

The failure to score significant gains in Arithmetic on the part of the older children is consistent with the findings when analyzed by grade. Thus, older children who may be in the lower grades, and overaged children in the upper grades generally show a loss in mean gains in Arithmetic. Again, the initial scores for children aged eleven and above show higher initial and interim Arithmetic scores than Word Meaning scores.

An examination of Grade Equivalent scores in the Lorge-Thorndike shows sizable gains, as indicated in the test results by grade.

Several things appeared to have operated between March and June. Children eleven and older had considerably greater academic potential than was apparent in the classroom. The discrepancies between various subtests of the SAT were apparently being minimized through the intervention of the reading programs.

At the same time the increase in measured intellectual potential, which can be reasonably attributed to the Progressive Choice Reading Programs, continued to develop at a more rapid rate than did reading skills. Since the older children were the ones most affected by the closed schools the gap between measured intelligence and academic achievement may be a function of the school closing.

Closing the schools in a community in which the children were already at an educational disadvantage compounded the educational problem to such an extent that when the schools were reopened, the children were only able to perform at levels far below their real potential.

Final Test Results (Table IV, Appendix E). The final test results were also regrouped according to age. Table IV does not include the 120 tenth graders who left in June, 1966.

The eleven through fourteen-year-olds made the largest gains in Word Meaning. All ages through age fourteen gained at least a half year in Paragraph Meaning. The students fifteen and above showed smaller gains.

Gains in Arithmetic of more than half a year were made by six and seven-year-olds, nine-year-olds and eleven-year-olds. Eight, ten and twelve-year-olds made gains of more than four months.

The Lorge-Thorndike non-verbal grade equivalent mean gains for seven through twelve-year-olds are more than 1.3 years as is the mean gain for the fifteen-year-olds. The thirteen-year-olds made more than a gain of one year (1.20), while the first graders gained .66. The scores of the children sixteen and above are regarded as unreliable because of the low N.

The large Non-Verbal Grade Equivalent gains which had been noted at the time of interim testing continued throughout the project and provide the single largest mean gains during the project. The gains are distributed over all ages.

Variations in patterns of mean gains observed at the interim testing tended to disappear as the project continued. Final gains were more uniform at each age level.

Test Results by Age-Grade Placement

The grouping of students in Prince Edward by achievement rather than by age presents a unique educational picture. As has been stated above, from one-half to three-fourths of the students were overage for their grade placement. The closing of the schools was a definite factor in this unusual grouping and must be considered when looking at test scores, the impact of the reading program, and the gains made by various ages and groups.

Scores and Difference Scores by Age Within Grades

Tables V through XIV in Appendix E present the pre-, and post scores, and matched gain scores for both the SAT and Lorge-Thorndike Tests. Note that the scores for the tenth graders are for the March to June period only, since these students left the study at the close of the school year.

Special Results and Analyses

The Prince Edward County study presented some special problems in analysis and also some special opportunities. As was stated earlier, about one third of the public school population attended anywhere from six months to four years of school during the years 1959-1963 when the public schools were closed. This education was obtained in other communities or in special programs organized in Prince Edward. Green (1964) classified this group as the Education group, and the group which received no schooling during these years was termed the No Education group. Both Green and Gordon compared the achievement scores of the Education and No Education groups and found that the Education group consistently scored higher than the No Education group. The findings of the present project relative to these two groups are presented below.

Many Prince Edward students also attended a Summer Catch-Up Program in 1965, in which the Progressive Choice Reading Program was used. Comparison between those who attended the Summer Program (Participation) with those who did not (No Participation) are made following the Education - No Education presentation.

Test Results by Education - No Education (Tables XV & XVI, Appendix E)

When we compare the pretest mean achievement and IQ grade equivalent scores for Prince Edward children by chronological age we find that those children who had some education during the four years of closed schools scored higher and were more likely to be in the appropriate age-grade placement than the children who had no education.

Only those children aged ten or older are included in this analysis by Education - No Education groups. Most children under ten were not affected directly by the school closing, and of those who did miss some school so few received education elsewhere as to be insignificant.

A number of observations can be made respecting the test data:

a. The children who had some education consistently scored higher on the SAT.

b. The children who had some education consistently scored higher on the Lorge-Thorndike Intelligence Tests in terms of grade equivalents.

As in the case of the pretests, the posttest scores of the Education group were generally higher than those of the No Education Group. However, when we compare the mean gains on matched students within age groups we find that the Education group tended to score greater gains on the SAT than did the No Education group, but tended to show less gain in IQ grade equivalents. On the SAT, the younger children in the Education group (ages 10, 11, 12) almost invariably made greater gains than did the corresponding children in the No Education group. Also, the pattern of greater achievement on the part of the Education group was more consistent for reading gains than for arithmetic.

The fact that the IQ grade equivalent scores on the Lorge-Thorndike posttest are considerably higher for all ages than the SAT scores suggests that the pupils have greater intellectual capacity than is being utilized in the classroom.

The fact that all students tended to make substantial gains in IQ scores indicates that the intellectual capacity of the students was significantly increased through the intervention of the Progressive Choice Reading Programs.

Table 3 shows a comparison between the Education and No Education groups *for students 10 through 17 years of age. The compari*son includes three subtests of the SAT and both verbal and non-verbal grade equivalent scores on the Lorge-Thorndike. Mean pretest scores are presented for purposes of comparing the initial grade equivalent scores for both groups. The Education group consistently had higher pretest scores. The data in Table 3 shows that both groups gained substantially on all subtests. It may be noted that the amount of gain was greater for the Education-group on three of the five subtests: Word Meaning, Paragraph Meaning and Lorge-Thorndike Non-Verbal.

Table 3

	Education				No Education			
	Pretest Mean		Mean Difference Score		Pretest Mean		Mean Difference Score	
	N	Grade Equiv.	N	Grade Equiv.	N	Grade Equiv.	N	Grade Equiv.
SAT								
WM	177	4.71	111	.58	326	3.78	240	.49
PM	176	5.11	111	.57	327	4.02	241	.50
A	144	5.25	86	.25	259	4.36	161	.36
Lorge-Thorndike								
Verbal	138	6.55	81	.71	161	5.05	103	1.14
Non-Verbal	166	6.17	100	1.29	299	4.55	233	1.19

A comparison of Education and No Education groups showing pretest level and mean difference scores for subjects aged 10 - 18 who had pre- and post-tests on the SAT and Lorge-Thorndike.

Table XVII (Appendix E) provides a comparison between the Education group and No Education group in terms of matched gain scores for ages 10 - 17 on the SAT and Lorge-Thorndike.

Test Results By Participation - No Participation In Summer Catch-up Program, 1965

The Summer Catch-Up Program offered in the summer of 1965 and described in Appendix B provided pre- and posttests on 317 matched children, youth and adults. All but 8 of the subjects in the Catch-Up study were 10 years of age or older. The present analysis is concerned only with children at least 10 years of age. (See Tables XVIII and XIX, Appendix E). Only 125 of the 317 were included in the school study during 1965-66. Of the school children who participated in the Catch-Up Program in 1965, those 17 years of age and older are not included in Table XVIII since only one was able to be pre- and posttested.

By comparing the March 1966 pre-scores presented in Tables XVIII and XIX it is clear that the students who had taken the Progressive Choice Reading Program in the summer of 1965 and who were also in the present study tended to score substantially higher on all tests than did those who were not in the Summer Program. The only exception to this trend was the Verbal portion of the Lorge-Thorndike where both groups pretested at roughly the same levels.

A summary of all students aged 10 - 17 combined comparing those who did and did not participate in the Catch-Up program is provided in Table 4. This summary confirms the pattern shown in the comparison of the same students by age group, except that, when all students are considered,the group that participated in the 1965 summer project scored higher on all pretests, including the Verbal section of the Lorge-Thorndike.

In terms of mean gains, both groups scored substantial gains on all subtests.

Table 4

	Catch-Up Program 1965				No Catch-Up Program 1965			
	N	Pretest	N	Gain	N	Pretest	N	Gain
SAT								
WM	135	4.51	100	.56	844	4.12	507	.51
PM	135	5.14	100	.43	847	4.41	512	.52
A	89	5.10	55	.33	717	4.57	371	.38
Lorge-Thorndike								
Verbal	97	5.99	69	.87	445	5.80	202	.92
Non-Verbal	125	6.33	92	1.24	749	4.98	473	1.25

A comparison of mean gain on the SAT and Lorge-Thorndike between students aged 10 - 17 who did and did not participate in the Reading Catch-Up Program, Summer, 1965.

SUMMER PROGRAM, 1966

The Prince Edward School Project continued during the summer of 1966. Participation in the summer program was not mandatory nor was regular attendance required.

There were actually two concurrent summer programs in 1966. One involved forty percent of the grade one through grade six students who had been in the project since its beginning in March. The other was the program for children who would be entering the first grade in September. Fifty-nine percent of these children attended the summer session at least half time. The two separate programs are described in this section.

Duration

The regular summer school began June 23 and ended on August 18, 1966. Classes began each day at 8:00 a.m. and ended at noon.

The Progressive Choice Reading Program began on June 28 and ended on August 12. Two hours a day were spent in the reading program. The other two hours were concerned with science, arithmetic, social studies--in short, a regular school curriculum.

In terms of reading program hours, the students were scheduled for the program two hours a day for thirty-four days, for a maximum available time of 68 class hours.

Population

Six hundred forty-six (646) students in the summer reading program were already in the study. They comprised fifty percent of the regular school population in grades one through six. (During the summer period, junior and senior high school students took a programmed course in driver education, and had some actual driving experience. The Institute of Educational Research provided these older students with a programmed driver education course which was used in conjunction with the materials provided by the Driver Training Institute.)

In addition, one hundred and fourteen (114) pre-first graders were included in the 1966 summer program. The pre-first graders were scheduled in the summer program six weeks for two hours a day, with a total of 29 days or 58 hours available. An additional two hours each day offered instruction in art, language expression, and numbers.

Only seventy-six of the one hundred and fourteen pre-first graders remained in the program for the full six weeks. Attendance records show that even those children who stayed in the program only attended classes half of the time.

Valid pretest scores were not obtained on pre-first graders until September when they entered the regular first grade classes. They were posttested along with all other Prince Edward students at the close of the project in January, 1967.

Teachers and Teacher Aides

There were no new teachers in the summer program. Three teachers who had taught reading at the high school level were brought into the elementary schools. Individual meetings were held with them to discuss using the materials with younger children. Teacher Aides were assigned to all reading teachers and performed in the summer as they had been during the regular school year.

Classes were observed by the project staff regularly during the session. Meetings, in addition to regular post-observation critiques, were held with teachers as required. These were usually brief but did allow for discussion of problem areas. On occasion, suggestions were given to teachers for additional activities, such as oral exercises during the language arts period.

Each teacher submitted a progress report covering the summer session.

End of Summer Testing - August 15 - 16, 1966

All students in the summer program, other than the pre-first graders were interim tested on August 15-16, 1966. Interim tests consisted only of the Word Meaning and Paragraph Meaning subtests of the Stanford Achievement Test. The Primary I Battery was administered in grades one through three and the Primary II Battery was used for grades four through six.

Of the initial summer enrollment of 646 students in grades one through six, 427 students were interim-tested in August at the end of the summer session. Matched gains were found on 368 summer students. The mean gains appear in Table 5.

Table 5

June to August
Summer School Difference Scores

Grade	Word Meaning (N)	Paragraph Meaning (N)
1	.07 (64)	.09 (64)
2	.24 (84)	.10 (84)
3	.30 (83)	.03 (82)
4	.00 (67)	-.03 (67)
5	.25 (45)	.18 (45)
6	.14 (25)	.08 (25)
Total	.17 (368)	.06 (367)

Mean gains by grade on the SAT for students in the Summer Program, 1966.

Table 6

Difference Scores for Students With and Without Summer School

WITH SUMMER SCHOOL					
	Stanford Achievement Test			Lorge-Thorndike	
Grades	Word Meaning (N)	Paragraph Meaning (N)	Arithmetic (N)	Verbal (N)	Non-Verbal (N)
1 - 3	.40 (198)	.54 (201)	.55 (203)	—	1.41 (191)
4 - 6	.64 (128)	.72 (128)	.47 (51)	1.91* (48)	1.42 (110)
NO SUMMER SCHOOL					
1 - 3	.36 (231)	.43 (234)	.54 (232)	—	1.14 (211)
4 - 6	.59 (214)	.55 (214)	.35 (99)	1.01* (80)	1.39 (185)

*Grades 5 and 6 only

A comparison of matched pre-, post- difference scores by Participation -- No Participation in the 1966 summer classes. Difference scores obtained by subtracting pretests (given March, 1966) from posttests (given January, 1967).

An examination of Table 5 indicates that all six grades made a mean gain of .17 grade years in Word Meaning and a mean gain of .06 years for Paragraph Meaning, during the summer session.

The teachers evaluated the summer program as superior to the March to June program. Their reasons included the fact that the children and the teachers were more familiar with the materials; the groups of students were smaller and could receive more individual attention; and the attitudes of the children and teachers had become more positive toward the program.

Table 6 compares difference scores over the entire duration of the project (March, 1966, to January, 1967) for those students who participated in the 1966 summer program with those who did not attend the summer classes. It will be noted that the gains for those who attended the summer session were somewhat greater on all subtests. Verbal IQ tests were not administered to grades 1 through 4.

New First Grade Class in September, 1966

Table XX (Appendix E) shows the final test results for children who entered the first grade in September, 1966. It includes a comparison of the total gains of the pre- first graders who were in the 1966 summer session and continued in the program in September, with those first graders who were not in the summer program.

If we consider all 109 of the September, 1966, first grade children on whom we have pre- and posttests we find that they show an IQ grade equivalent gain of .60. When we examine the reading gains (WM + PM + V ÷ 3) these same children gained .49 years in achievement. Both the reading gains (.49) and IQ gains (.60 grade years) are above the national norm of .40 grade years since this first grade class was only in the Basal Progressive Choice Reading Program for 4 months.

The mean September reading pre-score was .75 years while the mean January reading post-score was 1.26 grade years, for unmatched students.

EVALUATION OF THE PROJECT

The evaluation of the project is based on the degree to which the purpose of the project was achieved. This purpose was to provide a reading and language development program for the entire public school population of Prince Edward County in order to evaluate the degree to which it was possible to overcome the effects of school deprivation and educational disadvantage. The only Prince Edward County School children not included in the present study were those students who were in grades eleven and twelve and presumably functioning near grade level expectancy.

The effectiveness of the Progressive Choice Reading Programs (Basal and Accelerated) in accomplishing this purpose may be measured by analyzing the data from a number of perspectives. For purposes of clarity and specificity these perspectives are stated in the form of questions:

1. Did the first, second, and third graders who used the Basal Program increase their reading to approximate the national rate of learning for the primary grades?
2. Did students in fourth, fifth, and sixth grades who used the Accelerated Program increase their reading to approximate the national rate of learning.?
3. Did students from seventh through ninth grades increase their reading to approximate the national rate? (The tenth graders, as of March, 1966, terminated the program in June, 1966, and were not post-tested in January, 1967.)
4. Was there a transfer of learning, from the reading program to arithmetic?
5. Was the rate of gain on standardized instruments increased?
6. Was general intellectual capacity improved?
7. Did the reading program affect student motivation as reflected by attendance?
8. Was the dropout rate reduced as a consequence of the project?

9. What was the effect of the program on the attitude of teachers?

10. Did the program mitigate the harmful effect of the period of school closing on the children?

These questions are discussed below.

1. Reading Performance of Primary Grades (see Table 7.)

The mean gain in Word Meaning on the Stanford Achievement Tests for the primary grades between March, 1966, and January, 1967, was .39; for Paragraph Meaning, .47; and for Vocabulary, 1.00. The combined reading score (WM + PM + V ÷ 3) was .61.

The Prince Edward project covered seven-tenths (0.7)* of an academic year. Based on national norms it could be expected that students would gain .7 years over the course of the project. On the other hand, if we use norms for non-metropolitan Sourthern Negroes (the actual sample in this study) we would expect only .42 years of achievement.** Thus it will be seen that Prince Edward students in grades one, two and three gained above expectation, but below national norms. These students were scheduled in the program two hours per day.

2. Reading Performance of Elementary Grades -- 4 through 6 (Table 7.)

The mean gain in Word Meaning of the SAT for the elementary grades was .63, and for Paragraph Meaning, .61. There is no Vocabulary subtest at these grades. The combined reading score (WM + PM ÷ 2) was .62, which approaches the expected gains according to national norms and represents achievement of nearly 50% more than would be expected. These students were scheduled for two hours per day in the Accelerated Program.

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* This project covered approximately six months of the school year. In addition, approximately 35% of the students spent some time in summer school. It was assumed, for purposes of a conservative statistical analysis, that the program was in effect for seven tenths (.7) of a school year.

**Equality of Educational Opportunity, U.S. Department of Health, Education and Welfare, Washington, D.C. 1966

Table 7

MEAN GAINS ON TESTS

	Stanford Achievement Test				Lorge-Thorndike	
Grades	Word Meaning (N)	Paragraph Meaning (N)	Vocabulary (N)	Arithmetic (N)	Verbal (N)	Non-Verbal (N)
1-3	.39 (429)	.47 (435)	1.00 (411)	.54 (435)	—	1.26 (402)
4-6	.62 (342)	.62 (342)		.40 (150)	1.35* (134)	1.40 (295)
7-9	.44 (178)	.34 (178)		.22 (176)	.56 (167)	.93 (167)

*Grades 5 and 6 only

Mean Gains on Stanford Achievement Test and Lorge-Thorndike for all students.

3. Reading Performance of Junior High School -- Grades 7 through 9 (Table 7)

The mean gains in Word Meaning of the SAT for the junior high grades was .44 and for Paragraph Meaning, .34. The combined reading score (WM + PM ÷ 2) was .39 which was slightly lower than the expected gain for this population. It should be noted that these students had only one class hour of instruction per day, or only half of the total hours of instruction for grades 1 through 6.

The lower gains in reading and Lorge-Thorndike grade equivalents for these junior high school students may well be accounted for by shorter hours spent in the program.

4. Transfer Effects of Reading Program to Another Subject Area, Arithmetic. (Table 7)

The mean gain in the Arithmetic subtest of the SAT for the primary grades was .54. This gain was higher than the mean gain for Word Meaning or Paragraph Meaning, but lower than Vocabulary.

Since the first three grades achieved higher arithmetic gains (.54) than the expected norm (.42) it may be that the reading program did have a positive transfer to arithmetic at this level. It should also be noted that the Arithmetic subtest of the SAT tend to reflect verbal and reading ability to a considerable extent.

The mean gain in the Arithmetic subtest for the elementary grades (4 - 6) for the six months was .40. This gain was lower than for Word Meaning or Paragraph Meaning; however, both the initial and final Arithmetic grade scores were higher than for Word Meaning or Paragraph Meaning.

The mean gain in the Arithmetic subtest for the junior high grades (7 - 9) for the six months of the project was .22. Again the initial and final grade scores for the Arithmetic subtest tended to be higher than for reading.

5. Changes in Rate of Learning (Figure 5)

Rate of learning is taken to be the gain in achievement over a specified period of time. Standardized tests such as the SAT and Lorge-Thorndike are constructed in such a manner that it is assumed that large groups of children should gain 1.0 grade years for each 10 months of school. Thus 0.1 grade years represents one month of gain. Using this rate as the norm, Prince Edward students would be expected to gain .7 grade years over the seven months of the project if they were similar to the hypothetical national average. However, Prince Edward students differ in a number of regards. The Prince Edward County Schools population is Southern, Negro and non-metropolitan. Each of these categories contributes a decrement to the expected rate of gain. The expected gain for this population is only 60% of the expected national norms, so that over a period of seven months Prince Edward students who

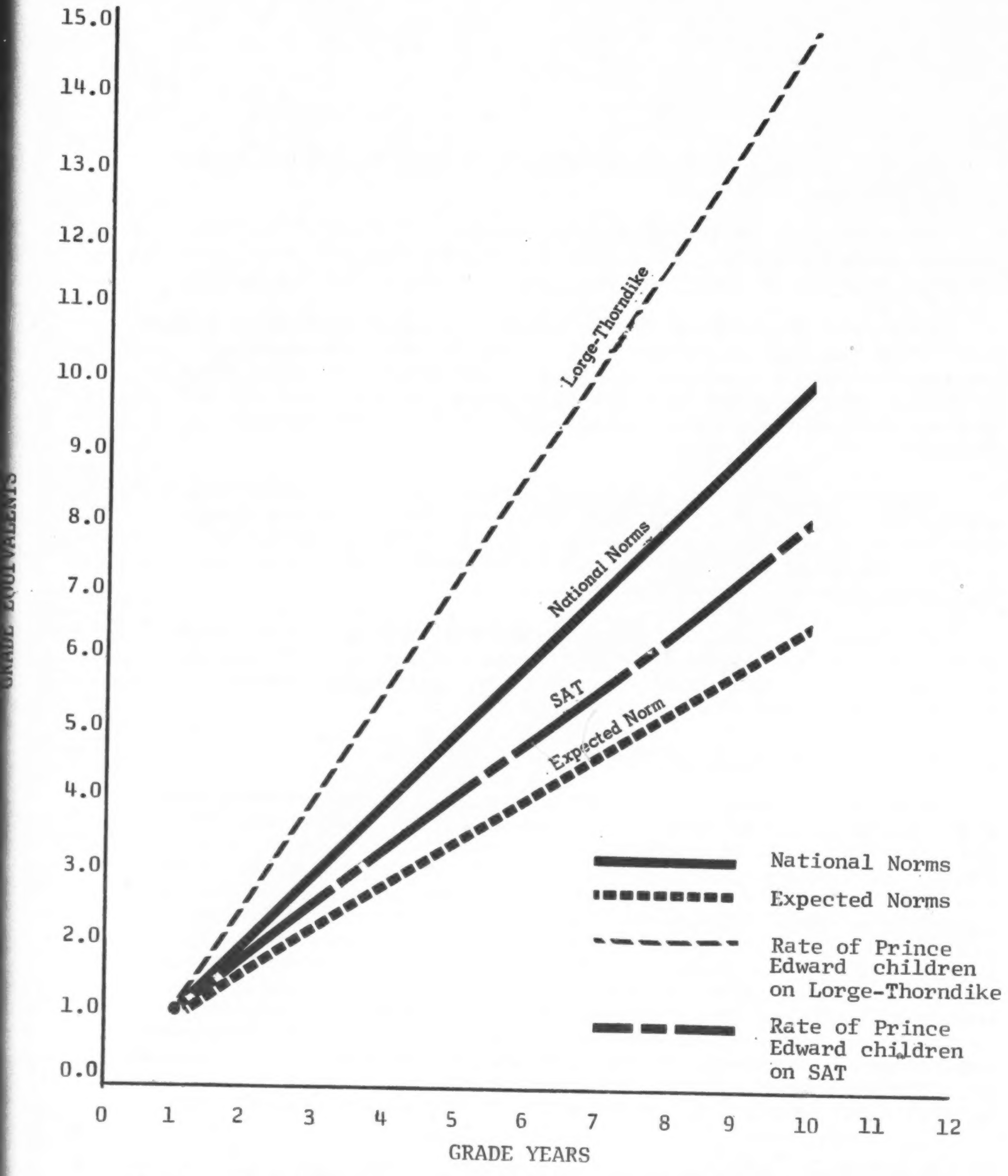

Fig.5 Comparison of incremental Mean Gains in grade year equivalents showing expected rate for rural Southern Negroes, rate obtained in present study on SAT, National Norms and rate obtained in present study on Lorge-Thorndike.

8. Change in Dropout Rate

There is no reliable data available on dropout rate, and further investigation is suggested.

9. Effects of Reading Program on Teachers

The reading program is designed to require a minimum of special training on the part of teachers and to provde step-by-step instructions for the teacher by use of the Instructor's Manual. To some extent, the materials are self-instructional.

To determine how teachers felt about themselves as teachers during the reading program as compared to their self evaluations before the reading program, a scale was designed. (See Appendix F) Only teachers who had taught in Prince Edward County before the reading program were involved in filling out the scale.

Appendix F also presents the teacher responses. The BPC teachers were the teachers for the primary grades, while the APC teachers were those for grade four and above. Apparently the teachers felt they were generally better teachers during the reading program, and their pupils learned better. The fact that the teachers generally felt closer to their pupils during the reading program may have been because the program permits and encourages individual attention to promote individual rates of progress. The teachers learned more about teaching and learned more about reading instruction.

The teachers felt that they had less freedom as teachers during the reading program. This awareness, however, did not affect the primary teachers in terms of reducing their enjoyment of teaching. The teachers from fourth grade and above, on the other hand, not only felt the lack of freedom but each who felt this lack also indicated that he enjoyed teaching less during the reading program than before.

The teachers approved of the materials and the primary teachers requested that they be permitted to continue the use of the materials even after the program officially terminated.

10. Continuing Effects of School Closing

The effects of the school closing (1959 - 1963) were still apparent as demonstrated by two sources of information: (1) the differences in grade scores between the group that had some education and the group that had none; and (2) the overage problem in the grade placement according to achievement.

were achieving at the rate of comparable students elsewhere would be expected to gain only .42 grade years on the SAT and *Lorge-Thorndike*. This expected rate of .42 does not, however, reflect the effect of having no public schools for a four year period.

This section will compare actual gains against both national norms (.7) and expected gains (.42).

Figure 5 shows the rate of gain on the *Stanford Achievement Test* for Prince Edward students compared with national and expected norms. For purpose of clarity this figure has been constructed on the basis of a 10 month school year rather than the seven month period of the present project. It should be noted that this Figure treats mean incremental gains as successive and shows relative rate of gains rather than actual grade achievement.

In terms of reading scores the Prince Edward students in the study had a mean gain of .54 grade years on the SAT for all grades one through nine. This gain represents 120% of the expected mean gain of .42 grade years over seven months for this population. In Figure 5 both the actual incremental mean gains and the expected incremental mean gain have been multiplied by 10/7 to permit comparison with the national norms.

6. Increase in Intellectual Capabilities (Figure 5)

The most striking mean gains achieved as a result of the reading program were made on the *Lorge-Thorndike*. Figure 5 also shows the incremental gains in IQ grade equivalents for Prince Edward children against the national and expected norms. The IQ grade equivalents have been adjusted from seven to ten month gains as were the SAT scores.

It will be seen that the *Lorge-Thorndike* grade equivalent gains are almost 50% greater than the national gain rate and 150% greater than the expected gains. Thus the project achieved striking increases in intellectual capacity which far exceed any usual expectations. The mean gain in IQ grade equivalents for all grades, one through nine, was 1.1 for the seven month period or 1.5 for a full school year.

7. Changes in Attendance

Gordon (1964) indicated that a thirteen percent absence rate for Prince Edward students had no appreciable effect on achievement scores. Attendance was recorded during the present project in order to determine the holding power of the reading program. Attendance figures were examined for two separate months prior to the institution of the present project and for two separate months during the project. On the basis of the comparison between two school months of the present project and two comparable months prior to the reading project we find that average attendance increased by more than two percentage points. This increase, however, is not considered significant.

8. Change in Dropout Rate

There is no reliable data available on dropout rate, and further investigation is suggested.

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8

SUMMARY AND CONCLUSIONS

The Prince Edward County School Project, 1966-1967, sponsored by the Office of Economic Opportunity and by the State of Virginia, was essentially to provide a corrective reading program for all the children from Grades One through Ten in the public schools. All of these children met criteria for the educationally deprived and all but a few met criteria for socially and economically disadvantaged.

The study was conducted to determine the effects of special intensive instruction in reading skills across an entire rural school system. Its main objective was to obtain an estimate of effectiveness in this community as a basis for generalization to other deprived rural communities. The reading instruction program covered nearly 1,500 of the 1,700 children in this public school system where a majority of the students had missed four years of schooling. The Institute of Educational Research and the cooperating federal agencies considered Prince Edward County as a test case. If Prince Edward children could benefit from such programs they could have functional value in other communities with less profound problems. This, then, was a study of the feasibility of the value of intervention using special reading materials, across most grades in a school system.

The project involved the use of The Progressive Choice Reading system in all classes in grades 1 through 10 in The Prince Edward County School system. In grades 1 through 3, reading instruction was given for two hours per day using the version of the program designed for young children (The Basal Progressive Choice Reading Program); in grades 4 through 6, The Accelerated Progressive Choice Reading Program was provided for two class periods daily, and in grades 7 through 10 to each class for one 50 minute period.

The first 10 grades of the school system extended their normal school day by 50 minutes to accomodate to the time given to this project. As the experimental reading classes covered all students in all grades, no special assignment procedures were used. Most teachers conducting reading classes were assigned aides (paid for by The United States Office of Education) to assist in the classroom. When we include both teachers and aides the teacher-student ratio approached 1:15.

The project began officially on March 4, 1966, with the training of twenty-eight teachers and nineteen aides in the use of the Progressive Choice Reading Method.

Initial testing began March 7 and terminated March 10, 1966. Final testing was January 25 - 27, 1967. The Stanford Achievement Tests and the Lorge-Thorndike Intelligence Tests were used. In addition, tests designed by The Institute of Educational Research were used.

An additional testing period was August 15 - 16, 1966, when the forty percent of the first through sixth graders who attended the Summer, 1966, program were tested on the two reading subtests of the SAT - Word Meaning and Paragraph Meaning.

Sixty percent of the children who would be first graders in September, 1966, entered the program during the summer session and were tested with the other new first graders in September and again in January.

Conclusions

1. The mean gain in the combined reading score for the primary grades was .61 years, which approximated the expected gains for the six months of the program when compared with national norms.

2. The mean gain in the combined reading score ~~was~~ for students in grades four through six was .62 years, which again approximated the expected gains for the six months of the program when compared with national norms.

3. The mean gain in the combined reading score for junior high students was .39 years.

The primary and elementary students improved their reading sufficiently to reflect national rates of learning; i.e., one month gain per one month of school. These students were in the program two hours a day. The junior high school students were below a national norm rate of learning, but this may be related to the fact that these students were in the experimental program for only one hour per day.

4. Arithmetic scores, both initial and final, were higher than for other achievement subtests on the SAT. The primary grades made the greatest mean gains with the elementary and junior high students achieving lesser gain scores. The losses in scores observed at the interim testing disappeared by the final testing. There was apparently some carry over from the reading program to arithmetic, especially for the primary children.

5. The rate of learning for all grade levels was accelerated during the project. The mean gains for all grades were greater than in the past.

6. The average mean gain for intelligence scores as measured by the Lorge-Thorndike, Non-Verbal Test was 1.14 years for all grade levels combined. There was a range of gain from .72 to 1.94 Achievement Years. These gains were the most remarkable in the project.

7. The teachers liked the program and felt they had learned a great deal from it. They felt closer to their students and indicated the students had learned a great deal. They felt less freedom as teachers during the program, but only those teaching above the primary grades reacted to this fact unfavorably.

8. Students who were in the Summer Catch-Up Program, 1965, achieved higher scores both before and at the end of the project, but smaller mean gains during the project than those who did not attend.

9. The students who were in the Summer Program, 1966, maintained their gains during the rest of this project, and made greater gains in intelligence test scores than non-attenders.

10. The new first graders who entered this program early (Summer, 1966) made greater mean gains in intelligence test scores than those not attending the summer program.

11. Students who had had education during 1959 - 1963 made consistently higher pre- and post-test scores, but made somewhat smaller mean gains than those who had no education. The students who had no education (1959 - 1963) tended to make greater gains than students who had had education.

At the close of the project the students were still behind national norm scores even though their mean gains showed a national norm rate. Thus, while this kind of intervention does bring about a change in learning rate it did not continue over a sufficient period of time to compensate for the initial low scores. Further, the students were greatly overage for their grade placement. Indeed, seventy percent were overage for their grade. This suggests that regrouping of students and revamping of curriculum are necessary to eradicate more thoroughly the educational problems of Prince Edward County. In disadvantaged communities where the debilitating affect of the overage problem is not present, the gains should be even greater.

It seems clear that the results were, in many ways, beyond expectation. The response of the children in Prince Edward County to the program was gratifying. The teachers and supervisors were cooperative and responded positively to the work performed. As a preliminary study, it can be stated unambiguously that the project demonstrated the feasibility of such supplemental intervention. Further efforts should be made to evaluate the long range effects of this project on student performance over the years ahead.

But the success of this brief study should not be misconstrued. The fact that certain limited objectives were obtained does not begin to indicate that the battle is won; it suggests however, that it can be won.

The major conclusions were:

1. It is feasible and productive to provide supplementary instruction with Progressive Choice Reading methods in a southern rural school.
2. Limited, but highly encouraging gain scores were made on reading, vocabulary and intelligence tests.
3. The children of Prince Edward County have the potential to move at higher rates than the traditional teaching methods and materials permit.
4. There is a requirement for a major research project in Prince Edward County which will develop materials, train and supervise teachers, provide evaluation methods and redesign classrooms. Such a project should provide a minimum of five years of instruction to the children in the program and cover the entire school day. Its major objective should be to insure that a high proportion of the student body reach or exceed the national norms for school achievement.

Such a research project should be designed so that all methods, materials and training techniques would be able to be standardized for use in any similar school, and would be exportable and capable of being instituted in a minimal period of time at relatively low cost.

This prototype system, once designed for use in Prince Edward ("Programming of Reading Skills For School Deprived Children", Woolman, 1963) now, after this study, seems more feasible than ever.

Appendix A

HISTORICAL CONTEXT

Prince Edward County, Virginia, is a southern rural county, not unlike other comparable counties in terms of attitudes and behaviors concerning the education of Negro and white children. The fact that Prince Edward County became the focus of battle may be more the result of the strength, courage, and determination of Prince Edward Negro and white leaders than to any peculiarity in the Prince Edward situation.

The whole nation was grappling with the problems of school segregation. Should Negroes be entitled to an equal education? Is the concept of separate but equal education tenable? Can integration be required by law? Can the Federal Government supersede the state government in matters of education? These were the questions that plagued the nation and these were the questions Prince Edward County forced to be answered, at least in part.

Some major events and decisions which determined the direction of education of Negroes and whites in Prince Edward County and which affected the entire nation were these:

October, 1950. Adult Negroes of Prince Edward County requested improved school facilities for their children. Little or no action followed.

April, 1951. High school students organized a school strike. Four hundred and fifty Negro students walked out of their school to protest the inadequate educational conditions in the county's Negro schools.

On this same day, a student leader contacted the attorneys of the NAACP in Richmond and requested legal assistance.

Two days later the Negro PTA met and endorsed the action of the students.

NAACP attorneys met with students and parents and took the case. They submitted a petition to the county school board and the superintendent of schools requesting a policy of non-discrimination in the public schools. The petition was rejected.

May 23, 1951. Attorneys for Negroes filed a petition with the U.S. District Court of Eastern Virginia. The principle being attacked in this case was separate-but-equal education.

May, 1952. U. S. District Court sustained the statutes requiring racial segregation, but ordered equalization of school facilities. This was in effect denying integration but requiring improved educational facilities for the Negroes.

May, 1953. Prince Edward County school officials began construction of a new Negro high school (Robert Moton) to comply with the separate but equal requirement.

May 17, 1954. The U. S. Supreme Court delivered its decision declaring that laws requiring racial segregation in public schools were unconstitutional. The Virginia State Board of Education promptly advised all school boards to maintain separation of races in public schools and the Prince Edward Board of Supervisors passed a resolution substantiating that it and the State of Virginia were clearly challenging the authority of the U. S. Supreme Court to determine educational policy for the states.

May, 1955. The U. S. Supreme Court stated that the defendants must make a prompt and reasonable start toward full compliance with the May 17, 1954 ruling. In reply, the County Board of Supervisors voted to appropriate funds to operate schools for only 30 days at a time.

White leadership formed the Prince Edward Corporation, the forerunner of the later Prince Edward School Foundation, which took charge of the private schools for the white children. Nothing was done for the Negro children.

February, 1956. The Virginia General Assembly adopted a resolution upholding the sovereignty of Virginia against encroachment upon the reserved power of the state.

Some whites stated that they would abandon public schools altogether to maintain educational segregation.

The State of Virginia supported Prince Edward County in its efforts to avoid complying with Court decrees to desegregate the public schools.

1956. Virginia passed anti-NAACP laws requiring cessation of solicitation for court suits in an action in which the solicitor was not a party.

1958. Judge Hutcheson of the Federal District Court handed down a decision giving the defendants a seven year delay for compliance with the order to desegregate the school facilities.

This decision was appealed to U. S. Circuit Court of Appeals.

Autumn, 1958. The Virginia Supreme Court of Appeals and the U. S. District Court in Norfolk ruled against Virginia's massive resistance laws.

1959. Judge Hutcheson's decision was reversed by the Fourth Circuit Court of Appeals which ordered desegregation in the public schools for September, 1959.

1959. Virginia Legislature repealed the state's compulsory school attendance law. This made it possible to close the public schools.

1959. The president of Prince Edward School Foundation announced that private schools for white children would be ready to open in September.

June, 1959. The County Board of Supervisors met and rejected a school board budget to operate schools during 1959-60. Instead it approved a budget sufficient only to maintain closed school facilities and to pay school indebtedness.

September, 1959. Seventeen hundred Negro children in the county were left entirely without educational facilities. Twelve hundred white children attended the private school and about two hundred white children were without educational facilities.

December, 1959. White leaders chartered a corporation called "Southside Schools, Inc.," and invited Negro parents to enroll their children in this all Negro, private school system for an annual tuition fee of $240.00. Only one application was received.

January, 1963. Dr. Robert Green felt a study of the educational status of the Negro children in the county was possible and mandatory.

February, 1963. A proposal was submitted to the U. S. Office of Education requesting funds to conduct such a study.

April, 1963. The proposal was funded and the study began in the latter part of the month. The study is reported in The Educational Status of Children in a District Without Public Schools. Cooperative Research Project No. 2321 of the U. S. Office of Education, 1964.

Spring, 1963. The NAACP requested through John F. Kennedy that something be done for Prince Edward County Public Schools, and President Kennedy requested that an effort be made.

Spring, 1963. Dr. Myron Woolman was requested to write a proposal by the Department of Health, Education and Welfare through the National Institutes of Mental Health. The proposal submitted, Synchronous Programming of Reading Skills for School Deprived Children, was to be carried out in Prince Edward. The proposal was unanimously approved by the Review Committee and also by mail vote of the NIMH Advisory Council.

June, 1963. The Woolman project approval was reversed by Advisory Council Action.

August, 1963. The Prince Edward Free Schools Association was organized. It was federally initiated and state sponsored and was privately financed. It was integrated; however, only eight white children attended during the 1963-64 academic year. The private schools for white children continued to function by voluntary contributions and state tuition grants to parents. The board of supervisors employed the device of tax relief to encourage donations to the private schools. It was later enjoined from the practice as long as the public schools remained closed. The Board and the faculty of the Free School Association were integrated.

March 30, 1964. The United States Supreme Court heard 1951 case for the third time.

May 25, 1964. The United States Supreme Court ordered the opening of the Prince Edward public schools for September, 1964.

Spring, 1964. The Prince Edward Free School was accredited by the Virginia State Department of Education. This enabled the high school graduates to fulfill a college entrance requirement.

May, 1964. Dr. Edmund Gordon evaluated the academic progress of the Free School pupils. He began evaluations in February and completed them in May.

September, 1964. The public schools of Prince Edward County opened. It was attended by Negro children. Only 8 to 10 white children enrolled.

February 19, 1965. A statement was issued by the Reverend L. Francis Griffin: "Now that the public schools have been reopened there is still a group of children too disadvantaged from their educationally deprived years to even make a beginning. There are approximately 400 to 500 youngsters from 14 to 18 years of age whose reading abilities are so primitive as to make public school courses meaningless. The principal of the system has predicted that at least 75% will soon drop out."

June, 1965. Formation of the Prince Edward Community Action Group, Inc.

Prior to April, 1965, small groups of farmers under the impetus of the Farm Demonstration Agency held several meetings to discuss the possibility of the formation of a Prince Edward Community Action Council as part of the Federal Poverty program of the Office of Economic Opportunity. An open meeting was called and a representative from OEO (Melvin Humphrey) was invited. He stated that the conditions for securing funds included, most importantly, that the leadership be integrated and represent a fair cross representation of the community. At this meeting the Reverend Griffin and Robert Taylor were appointed acting co-chairmen. At a second meeting to which representatives from all community organizations were invited, Reverend Griffin and Mr. Taylor were formally elected.

During April and May additional meetings were held and a first project was agreed to. The already active Citizens Committee for Public Education was in the process of formulating a literacy project. This project which was to be privately funded was fairly well worked out with the exception of the method to be used. Private funding, however, was not readily forthcoming and this moved Reverend Griffin to suggest this as the CAP's first project. Reverend Griffin already knew Mr. Gordon R. Carey and Dr. Woolman and invited them to assist in the preparation of the proposal which would include the use of Dr. Woolman's materials. Conduct and administration funds were received at the end of June. Volunteer instructors, students and centers had already been recruited by the Citizens Committee and funds were used to set up an office and hire personnel.

Summer, 1965. Project Catch-Up was sponsored by Demonstration Grant #9201 from the Office of Economic Opportunity. The Prince Edward Community Action Group, Inc., was instrumental in making this project viable, through its co-directors, the Reverend L. Francis Griffin and Mr. Robert Taylor.

Dr. Myron Woolman, Director, The Institute of Educational Research, Inc., directed the Project Catch-Up and reported it in The Summer Catch-Up Project in Prince Edward County, published by the Institute, 1965.

August 17, 1965. A conference was held with local school officials, state education officials, officials of the Institute of Educational Research, and officials of the Prince Edward Community Action Group, Inc., to request that Dr. Woolman's materials be used in the Prince Edward public schools for the 1965-1966 academic year.

December 14, 1965. A Demonstration Grant was requested under PL 88-452 Title II A Section 207 from the Office of Economic Opportunity to have educational portions funded under Title I of the Elementary and Secondary School Act of 1965, administered by the Office of Education. Research and demonstration portions of the project would be supported by OEO.

February 24, 1966. Final negotiations from all agencies and authorities were completed.

March 8, 1966 - March 7, 1967 The Prince Edward School Project, 1966-1967 was carried out. The late start accounted for the change in academic year.

Appendix B

EDUCATIONAL EXPERIENCES 1959 - 1963 AND 1963 - 1965

Educational experiences for the Negro school population during the 1959-1963 period consisted of out-of-county education and in-county education. According to Green, "Some 33 percent of the children affected by the school closing were able to attend school for some period." (1964, p. 99). Slightly less than half of these attended schools out-of-county while the remaining received some education through programs sponsored by the Prince Edward County Christian Association; The American Friends Service Committee; and The Virginia Teachers Association.

The Prince Edward Christian Association, formed late in 1959, set up temporary educational centers for children. The first two were set up in February, 1960. The majority of teachers left after the first year and the winter centers terminated by the spring of 1962. Some 16 centers, however, had been in operation by February, 1961, serving some 650 children and youth. The centers had become mere places for supervised group activity, however, rather than educational centers. 27.6% of the children had attended the centers.

Outside groups began to help in 1961 with crash programs offered primarily in the summer. The Virginia Teachers Association provided a crash remedial program serving about 425 Negro children. The Virginia Teachers Association repeated its program in the summer of 1962 with the help of the Student Christian Federation of New England. Some 563 Negro children participated.

During the summer of 1963 another crash program was carried out by students from Queens College and by New York public school teachers.

The range of educational experiences was from six weeks to four years with most children attending only one program for one year. Summer crash programs supplemented the winter programs and attendance was "somewhat higher than that for winter training sessions. Here again, the majority of the sample attending did so for one summer, with almost none attending the full four years. And . . . fewer members of the sample attended the summer sessions than did not attend." (Robert Green, 1964, p. 104).

Children who had more education were generally those who went out-of-county. In fact many of these children also attended various crash programs in Prince Edward while home on vacation. The children who remained in the county and had some education - a minimum of six weeks - were classified by Green as the Education group along with the children who had more extensive education out-of-county. Children who remained in the county and had no education during the four year period were classified by Green as the No Education group. These two groups were compared in terms of educational achievement and other variables to an adjacent county school population where education was uninterrupted. These findings are summarized below.

Educational Achievement and Intelligence, 1963 - 1965

Green administered the Stanford Achievement Tests, during the summer of 1963 to Prince Edward County children of age 11 and above. He divided them into the Education and No Education groups as described above and compared their achievement scores to another nearby county where education was uninterrupted. The sample consisted of 154 No Education, 125 Education and 338 Other County.

Green stated that achievement in all areas was depressed by the lack of education. Reading scores were affected at all age levels. Arithmetic skills showed increasingly greater effects at older age levels.

The achievement scores of the Other County comparison group ranged from one to two grade levels higher than the Prince Edward County Education group while the comparison group ranged from 2.5 to 4 grade levels above the No Education group. (Green, 1964, p. 220).

Green (pp. 231 - 233) also tested some 288 children for intelligence, using the Stanford-Binet, 1961, test. The subjects ranged in age from 5 to 20. One hundred and fifty of the group had a classification of Education and 138 had a classification of No Education.

He reported that the average measured intelligence for children of the Education sample was about 80. The average measured intelligence for children in the No Education group was about 80 prior to age 8 and about 65 after the 8 year age level.

At the opening of the Free Schools in September, 1963, a number of facts were made clear as a result of the Green study:

1. The Prince Edward County children who had No Education from 1959 to 1963 were most severely affected in terms of educational achievement and intelligence as a result of no education.

2. The Prince Edward County children who had some education from 1959 to 1963 were relatively unaffected by limited education when compared to the other county where education was uninterrupted, but scored better than the No Education group in both educational achievement and intelligence.

3. The Prince Edward County public school population which had been affected by the closing of the schools, i.e., mainly the Negro children, reflected a cumulative effect of educational deprivation which is characteristic of most studies of culturally disadvantaged. That is, scores on achievement tests and intelligence tests became increasingly depressed with the years.

During the year of the Free Schools, 1963 - 1964, Edmund Gordon (1964) of Yeshiva University was responsible for the testing of the Prince Edward County children. His findings have not been published as yet, but a preliminary report was made available and drawn on for information important both to the educational situation during the Free Schools and subsequent educational plans, activities and problems. He was testing in an educational setting formulated by Dr. Neil Sullivan, Superintendent of the Free Schools.

Dr. Sullivan organized the children according to chronological age in September, 1963, rather than according to achievement scores. The children so grouped were in classes of about 15 pupils to a class.

The pre-testing occurred in October, 1963, but was unreliable since many of the students "were given tests the floor of which was too high for them to reach. It was decided, therefore, to repeat the Metropolitan Achievement series later in the year, in February and again in May, to obtain measures for comparison." (Gordon, 1964, p. 15).

Gordon reported that the Education group consistently scored higher than the No Education group in achievement scores. The overall mean achievement gains for the Education group was .87 greater than for the No Education group.

In addition to the measurement of academic achievement for the total population Gordon selected the 6, 9 and 11 year old population to test the effects of no educational interruption, three years of educational interruption, and one year of education followed by four years of educational interruption.

He included the scores of the Chicago Non-Verbal Intelligence Examination. His findings are presented here:

Summary of Data in Four Achievement Areas

October 1963, M. A. T.*

Age Group		Word Knowledge	Word Discrimination	Reading	Arithmetic
6	N	106	106	106	106
	$\bar{X}$	1.13	1.04	1.15	1.04
9	N	80	80	80	80
	$\bar{X}$	1.77	1.61	1.77	1.81
11	N	None	None	None	None

February 1964, M.A.T.

Age Group		Word Knowledge	Word Discrimination	Reading	Arithmetic
6	N	115	115	115	115
	$\bar{X}$	1.26	1.27	1.37	1.23
9	N	87	87	87	87
	$\bar{X}$	1.60	1.72	1.65	2.02
11	N	108	79	108	107
	$\bar{X}$	2.44	2.21	3.12	3.03

May 1964, M.A.T.

Age Group		Word Knowledge	Word Discrimination	Reading	Arithmetic
6	N	70	70	70	70
	$\bar{X}$	1.72	1.60	1.73	1.79
9	N	50	50	50	50
	$\bar{X}$	1.93	2.07	2.05	2.35
11	N	59	58	58	49
	$\bar{X}$	3.65	3.40	3.88	4.36

I.Q. Chicago N.V.

Age Group		I.Q. Chicago N.V.
6	N	61
	$\bar{X}$	86.07
9	N	84
	$\bar{X}$	82.51
11	N	58
	$\bar{X}$	74.45

*Metropolitan Achievement Tests

As may be seen from the chart, the 6 year old children who had missed no education earned mean achievement scores which were normal for first grade children. The 9 year olds who had no previous education earned higher pre-test achievement scores than the 6 year olds but did not make gains comparable to the 6 year olds. Their higher final scores were off-set by higher intial scores. The final achievement scores were at least two years behind grade level. The 11 year olds who had a year or two of schooling followed by four years of interrupted education tested almost three years behind grade level in May, 1964. Their initial scores were invalid because of inappropriate test floors.

The IQ scores as measured by the Chicago Non-Verbal Test showed a steady decrease with age, a finding consistent with Green's and other studies concerning the cumulative affects of educational deprivation.

The Summary further shows a marked loss of population between October and May. The population of six year olds dropped from 106 to 70. The population of nine year olds dropped from 80 to 50 and the population of eleven year olds dropped from 108 in February to 59 in May. Whether or not the decreased population was an absence or a real drop-out was not clear; however, the gains reported in the achievement subtest may be unreliable since some kind of selective factor was operating. Many children in rural areas withdrew from school to help in the fields.

At the end of the Free Schools both the effects of educational deprivation and the cumulative effects of such deprivation were apparent. A factor not apparent at the end of the Free Schools was the age-achievement problem. This became apparent as the 1964-1965 school year approached and classes were to be organized on the basis of achievement.

Green (1966) reported achievement scores for the Prince Edward public school children for 1964 and 1965 and compared them with the 1963 scores. Further, the Education - No Education dichotomy was preserved. Green summarized his findings as follows:

1. The average achievement exhibited for all groups was still less than national norm groups of the same age with very young children being close to the norm.

2. The changes in achievement during the Free School year were much higher than during the second year.

3. The children with intervening education did not change substantially more over the one- or two-year period than children who had a four-year school layoff; and, consequently, gaps in achievement levels for these two groups were neither lessened nor widened. (pp. 44-45)

The gaps of achievement between the Education and No Education groups continued to remain an average of two or more years. The No Education group made greater gains in some areas than the Education group during the 1964-1965 school year, and lesser in others, but the whole picture remained the same in terms of comparable achievement.

Actual achievement scores according to grade, as contrasted with gain scores or age scores, were misleading; therefore, the test results do not reflect an age-grade achievement relationship. As a matter of fact, the average age for a fourth grade population achieving at a 3.19 Reading Comprehension at fourth grade was 12.4 years rather than the 10 years average age we would expect in the typical fourth grade.

A new problem had presented itself as a result of placing children in grades according to achievement scores rather than chronological age. Large numbers of children were overage for their grade. It was the awareness of the large number of older children in the lower grades plus the increasing numbers of older children considering dropping out of school which led to the Summer Catch-Up Project held during the summer of 1965. A full report of that program appears in the Summer Catch-Up Project in Prince Edward County, by Myron Woolman, Director, The Institute of Educational Research, Washington, D. C., 1965.

With an average input of 71.2 hours, the gains made by the adolescents and adults* in the summer project were .21 on the Word Meaning subtest of the Stanford Achievement Tests, and .46 on the Paragraph Meaning subtest of the SAT.

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*Adults attended the program which had been organized for the older school age children and dropouts. The adults were encouraged to remain.

Appendix C

Appendix C

OBSERVATION VISIT REPORT FORM

Teacher________________________________ Project____________________

School_________________________________ Date________ Visit #__________

Grade__________ Eval. Group__________ Sched. Follow-up Date__________

A.	General attitude	1	2	3	4	5
B.	Class performance rate	1	2	3	4	5
C.	Use of materials	1	2	3	4	5
D.	Performance of aide or assistant(s)	1	2	3	4	5
E.	The classroom	1	2	3	4	5
F.	Special problems	1	2	3	4	5

Comments:

A.____

____

____

B.____

____

____

C.____

____

____

D.____

E.____

F.____

Suggestions to teacher:

Teachers' comments or reactions:

Appendix D

Appendix D

Monthly Progress Form

No. of minutes/day	No. days per week	No. days in Report period	Report Period From __________ To __________	Teacher's name __________ Instructional Method in Use __________

Student's Name	No. days present during period	Cycle Segment (PC Teachers only)		Progress Good (1) Fair (2) Poor (3)	Attitude Enthusiastic (1) Interested (2) Disinterested (3)	Teacher's Comments	For IER use only	
							No. obs.	Reference

Indicate new students by (n) Indicate dropouts by (d)

Appendix E

TABLE I

INTERIM SCORES AND GAINS BY GRADE
MARCH AND JUNE, 1966 - GRADES 1 THROUGH 10
PRINCE EDWARD COUNTY PUBLIC SCHOOLS

Grade in School	Stanford Achievement Test Grade Equivalent Scores									Lorge-Thorndike Grade Equivalent Scores					
	Word Meaning			Paragraph Meaning			Arithmetic			Verbal			Non-Verbal		
	Pre- (N)	Interim (N)	Matched Gains (N)	Pre- (N)	Interim (N)	Matched Gains (N)	Pre- (N)	Interim (N)	Matched Gains (N)	Pre- (N)	Interim (N)	Matched Gains (N)	Pre- (N)	Interim (N)	Matched Gains (N)
1	1.10 (142)	1.34 (133)	.22 (123)	1.21 (145)	1.37 (134)	.15 (126)	1.23 (147)	1.54 (134)	.30 (128)	– –	– –	– –	1.08 (116)	1.09 (134)	.07 (99)
2	1.72 (177)	1.78 (176)	.05 (162)	1.78 (180)	1.89 (176)	.10 (164)	1.78 (183)	2.01 (177)	.20 (167)	– –	– –	– –	1.47 (168)	2.01 (168)	.54 (146)
3	2.50 (199)	2.51 (192)	-.02 (173)	2.59 (201)	2.70 (191)	.06 (174)	2.36 (205)	2.28 (194)	-.05 (180)	– –	– –	– –	2.87 (194)	2.74 (195)	-.15 (171)
4	2.93 (196)	3.05 (189)	.07 (178)	2.98 (196)	3.16 (189)	.13 (178)	3.39 (112)	3.80 (188)	.22 (99)	– –	– –	– –	3.33 (186)	4.03 (179)	.62 (162)
5	3.32 (138)	3.69 (129)	.33 (112)	3.46 (138)	3.66 (129)	.15 (112)	4.23 (70)	4.35 (129)	.04 (49)	4.44 (131)	4.44 (125)	.02 (107)	4.93 (131)	5.48 (125)	.69 (107)
6	3.95 (81)	4.27 (74)	.17 (70)	4.03 (81)	4.09 (74)	-.04 (70)	4.37 (54)	4.58 (74)	-.26 (45)	5.32 (38)	5.45 (71)	3.34 (29)	5.48 (39)	6.57 (72)	.29 (30)
7	5.21 (58)	5.96 (52)	.73 (50)	5.63 (58)	5.99 (52)	.33 (50)	5.73 (58)	5.64 (52)	-.04 (50)	6.96 (56)	6.77 (52)	-.23 (50)	7.26 (56)	8.39 (52)	1.05 (50)
8	4.56 (61)	5.04 (51)	.37 (48)	4.72 (61)	4.98 (51)	.06 (48)	5.14 (60)	4.98 (51)	-.28 (47)	5.43 (58)	6.03 (50)	.18 (45)	5.29 (59)	6.88 (50)	1.22 (46)
9	5.02 (138)	5.16 (121)	.19 (110)	5.47 (138)	5.26 (121)	-.16 (110)	5.44 (133)	5.16 (121)	-.20 (110)	6.02 (127)	6.19 (119)	.29 (107)	6.02 (128)	6.72 (119)	.73 (107)
10	6.27 (119)	6.36 (103)	.30 (86)	7.11 (118)	6.58 (103)	-.28 (86)	6.55 (116)	6.02 (103)	-.32 (85)	7.83 (110)	8.13 (97)	.75 (83)	7.29 (108)	7.51 (97)	.97 (81)
Totals	3.26 (1408)	3.43 (1264)	.17 (1134)	3.44 (1417)	3.50 (1264)	.05 (1141)	3.48 (1239)	3.56 (1282)	.01 (987)	6.00 (520)	6.05 (539)	.41 (441)	4.50 (1185)	5.14 (1151)	.60 (1013)

TABLE II

FINAL SCORES AND GAINS BY GRADE
MARCH, 1966 AND JANUARY, 1967
GRADES 1 THROUGH 9

	Stanford Achievement Test Grade Equivalent Scores												Lorge-Thorndike Grade Equivalent Scores					
	Word Meaning			Paragraph Meaning			Arithmetic			Vocabulary			Verbal			Non-Verbal		
Grade in School at Pre-Test	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)
1	1.10 (142)	1.55 (146)	.41 (117)	1.21 (145)	1.82 (146)	.58 (120)	1.23 (147)	1.88 (146)	.60 (122)	1.19 (148)	1.80 (146)	.58 (122)	- -	- -	- -	1.08 (116)	1.90 (134)	.89 (100)
2	1.72 (177)	2.24 (172)	.48 (143)	1.78 (180)	2.26 (172)	.46 (144)	1.78 (183)	2.28 (172)	.41 (144)	1.64 (186)	2.17 (173)	.58 (143)	- -	- -	- -	1.47 (168)	2.88 (177)	1.28 (133)
3	2.50 (199)	2.84 (217)	.29 (169)	2.59 (201)	3.01 (217)	.41 (171)	2.36 (205)	2.99 (217)	.62 (169)	1.44 (206)	2.97 (195)	1.78 (146)	- -	- -	- -	2.87 (194)	4.31 (223)	1.47 (169)
4	2.93 (196)	3.54 (192)	.53 (169)	2.98 (196)	3.62 (192)	.54 (169)	3.39 (112)	3.97 (125)	.35 (63)	- -	- -	- -	- -	- -	- -	- -	- -	- -
5	3.32 (138)	4.25 (106)	.77 (100)	3.46 (138)	4.56 (106)	.93 (100)	4.23 (70)	4.90 (76)	.58 (38)	- -	- -	- -	4.44 (131)	5.99 (104)	1.46 (95)	4.93 (131)	7.04 (104)	1.94 (95)
6	3.95 (81)	4.62 (79)	.60 (73)	4.03 (81)	4.42 (79)	.38 (73)	4.37 (54)	4.79 (79)	.31 (49)	- -	- -	- -	5.32 (38)	6.38 (77)	1.08 (39)	5.48 (39)	6.28 (77)	.72 (39)
7	5.21 (53)	5.59 (59)	.52 (53)	5.63 (58)	5.87 (59)	.40 (53)	5.73 (58)	5.88 (59)	.20 (53)	- -	- -	- -	6.96 (56)	6.89 (59)	.25 (51)	7.26 (56)	7.96 (59)	.82 (51)
8	4.56 (61)	4,88 (56)	.47 (46)	4.72 (61)	5.21 (56)	.55 (46)	5.14 (60)	5.14 (56)	.07 (46)	- -	- -	- -	5.43 (58)	6.19 (54)	.85 (44)	5.29 (59)	6.14 (54)	.98 (44)
9	5.02 (138)	5.61 (94)	.37 (79)	5.47 (138)	5.91 (94)	.17 (79)	5.44 (133)	5.86 (94)	.33 (77)	- -	- -	- -	6.02 (127)	6.86 (87)	.61 (72)	6.02 (128)	7.21 (87)	.97 (72)
Total			.49 (949)			.49 (955)			.38 (761)			1.00 (411)			.85 (301)			1.14 (864)

TABLE III

INTERIM SCORES AND GAINS BY AGE
MARCH AND JUNE, 1966 - AGES 6 THROUGH 19
PRINCE EDWARD COUNTY PUBLIC SCHOOLS

	Stanford Achievement Test Grade Equivalent Scores									Lorge-Thorndike Grade Equivalent Scores					
	Word Meaning			Paragraph Meaning			Arithmetic			Verbal			Non-Verbal		
Age	Pre- (N)	Interim (N)	Matched Gains (N)	Pre- (N)	Interim (N)	Matched Gains (N)	Pre- (N)	Interim (N)	Matched Gains (N)	Pre- (N)	Interim (N)	Matched Gains (N)	Pre- (N)	Interim (N)	Matched Gains (N)
6	1.15 (77)	1.32 (69)	.23 (64)	1.29 (78)	1.36 (69)	.11 (65)	1.31 (80)	1.53 (69)	.25 (67)	- -	- -	-- -	1.00 (64)	1.03 (71)	-.10 (53)
7	1.38 (108)	1.52 (93)	.11 (88)	1.45 (110)	1.57 (94)	.12 (89)	1.37 (111)	1.72 (94)	.32 (89)	- -	- -	- -	1.11 (93)	1.48 (88)	.44 (72)
8	1.94 (127)	2.03 (129)	.03 (111)	1.95 (130)	2.12 (129)	.09 (114)	1.93 (131)	2.07 (130)	.09 (115)	- -	- -	- -	1.79 (122)	1.98 (121)	.24 (100)
9	2.46 (121)	2.60 (107)	.02 (97)	2.52 (121)	2.72 (107)	.10 (97)	2.35 (115)	2.64 (108)	.16 (91)	- -	- -	- -	2.53 (114)	2.74 (108)	.17 (93)
10	2.68 (158)	2.80 (143)	.09 (130)	2.76 (161)	2.91 (142)	.09 (131)	2.65 (131)	2.97 (148)	.06 (105)	4.93 (20)	5.25 (21)	.19 (20)	2.89 (153)	3.35 (145)	.36 (126)
11	3.12 (130)	3.16 (117)	.09 (111)	3.26 (130)	3.24 (117)	.04 (111)	3.36 (92)	3.64 (116)	.09 (74)	5.12 (37)	5.50 (35)	.02 (29)	3.95 (119)	4.78 (112)	.67 (99)
12	3.30 (138)	3.68 (111)	.26 (105)	3.40 (139)	3.73 (111)	.16 (106)	3.74 (100)	3.84 (119)	.02 (74)	5.65 (54)	5.48 (60)	2.01 (46)	4.55 (112)	5.07 (119)	.45 (90)
13	3.86 (124)	4.36 (109)	.38 (102)	4.10 (124)	4.44 (109)	.17 (102)	4.53 (95)	4.49 (111)	-.04 (76)	5.95 (74)	6.18 (73)	.00 (63)	5.12 (113)	6.10 (105)	.75 (90)
14	4.16 (109)	4.43 (92)	.17 (88)	4.42 (109)	4.49 (92)	-.05 (88)	4.96 (87)	4.72 (93)	-.23 (67)	5.92 (73)	5.78 (79)	-.16 (61)	5.83 (89)	6.68 (92)	.82 (72)
15	4.66 (88)	5.04 (78)	.34 (74)	5.04 (87)	5.00 (78)	-.24 (73)	5.49 (80)	5.11 (78)	-.32 (67)	5.77 (80)	6.05 (75)	.33 (66)	5.58 (85)	6.23 (79)	.82 (69)
16	5.14 (85)	5.05 (67)	.10 (62)	5.38 (85)	5.26 (67)	.21 (62)	5.51 (83)	5.13 (67)	-.18 (61)	6.11 (84)	6.09 (65)	.32 (59)	6.36 (83)	6.45 (65)	2.15 (58)
17	5.29 (61)	5.31 (47)	.09 (47)	5.83 (61)	5.40 (47)	-.30 (47)	5.50 (60)	5.32 (47)	.00 (46)	6.39 (61)	6.64 (45)	.38 (44)	5.97 (62)	6.38 (45)	.60 (45)
18	5.12 (37)	5.82 (39)	.59 (31)	5.84 (37)	5.85 (39)	-.38 (32)	5.55 (37)	5.42 (39)	-.29 (32)	5.97 (35)	7.08 (40)	1.11 (31)	5.32 (35)	6.46 (40)	1.08 (30)
19 +	5.53 (19)	5.69 (22)	.25 (17)	6.14 (19)	5.60 (22)	-.22 (17)	5.91 (19)	5.42 (22)	-.32 (17)	6.78 (19)	6.62 (20)	-.20 (15)	5.57 (18)	5.82 (19)	1.04 (14)

TABLE IV

TEST RESULTS BY AGE PRINCE EDWARD COUNTY PUBLIC SCHOOLS
MARCH, 1966 AND JANUARY, 1967

	Stanford Achievement Test Grade Equivalent Scores									Lorge-Thorndike Grade Equivalent Scores					
	Word Meaning			Paragraph Meaning			Arithmetic			Verbal			Non-Verbal		
Age March 1966	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)
6	1.15 (77)	1.57 (59)	.45 (50)	1.29 (78)	1.86 (59)	.57 (52)	1.31 (80)	1.87 (59)	.57 (53)	- -	- -	- -	1.00 (64)	1.81 (59)	.66 (41)
7	1.38 (108)	1.93 (107)	.49 (93)	1.45 (110)	2.05 (107)	.56 (93)	1.37 (111)	2.11 (107)	.57 (94)	- -	- -	- -	1.11 (93)	2.43 (110)	1.33 (82)
8	1.94 (127)	2.40 (126)	.39 (98)	1.95 (130)	2.53 (123)	.50 (99)	1.93 (131)	2.39 (125)	.43 (97)	- -	- -	- -	1.79 (122)	3.05 (130)	1.36 (92)
9	2.46 (121)	2.96 (120)	.44 (97)	2.52 (121)	3.08 (120)	.50 (97)	2.35 (115)	3.06 (117)	.61 (90)	- -	- -	- -	2.53 (114)	4.01 (122)	1.40 (94)
10	2.68 (158)	3.16 (115)	.45 (95)	2.76 (161)	3.31 (115)	.57 (96)	2.65 (131)	3.27 (96)	.43 (50)	4.93 (20)	6.66 (12)	1.45 (10)	2.89 (153)	4.48 (116)	1.44 (96)
11	3.12 (130)	3.71 (130)	.61 (115)	3.26 (130)	3.90 (130)	.68 (116)	3.36 (92)	4.02 (107)	.62 (66)	5.12 (37)	7.42 (46)	2.17 (39)	3.95 (119)	5.60 (134)	1.47 (112)
12	3.30 (138)	4.22 (122)	.66 (107)	3.40 (139)	4.27 (122)	.55 (107)	3.74 (100)	4.54 (98)	.47 (66)	5.65 (54)	6.93 (66)	.99 (47)	4.55 (112)	6.34 (125)	1.50 (90)
13	3.86 (124)	4.34 (117)	.54 (99)	4.10 (124)	4.69 (117)	.52 (100)	4.53 (95)	4.84 (104)	.31 (68)	5.95 (74)	7.21 (75)	.93 (55)	5.12 (113)	6.27 (121)	1.20 (91)
14	4.16 (109)	4.59 (98)	.56 (86)	4.42 (109)	4.77 (98)	.52 (86)	4.96 (87)	5.15 (88)	.32 (66)	5.92 (73)	6.03 (84)	.36 (67)	5.83 (89)	6.58 (103)	.91 (80)
15	4.66 (88)	4.47 (69)	.35 (55)	5.04 (87)	4.52 (69)	.25 (55)	5.49 (80)	4.97 (65)	.24 (47)	5.77 (80)	5.68 (65)	1.04 (43)	5.58 (85)	5.49 (71)	1.52 (46)
16	5.14 (85)	4.13 (34)	.03 (31)	5.38 (85)	4.48 (34)	.25 (31)	5.51 (83)	4.48 (34)	.05 (30)	6.11 (84)	5.03 (37)	.39 (31)	6.36 (83)	5.44 (37)	.51 (31)
17	5.29 (61)	4.72 (18)	.40 (16)	5.83 (61)	4.45 (18)	-.13 (16)	5.50 (60)	5.09 (18)	.23 (16)	6.39 (61)	5.44 (22)	.45 (17)	5.97 (62)	5.38 (22)	.02 (17)
18	5.12 (37)	3.93 (5)	.36 (3)	5.84 (37)	3.45 (5)	.13 - (3)	5.55 (37)	4.79 (5)	.10 (3)	5.97 (35)	3.27 (5)	-.80 (2)	5.32 (35)	2.57 (5)	.10 (2)
19+	5.53	6.69	-	6.14	6.80	-	5.91	5.65	-	6.78	6.90	-	5.57	3.59	-
Total	-	-	.49	-	-	.49	-	-	.38	-	-	.85	-	-	1.14

TABLE V

TEST RESULTS: MARCH, 1966 AND JANUARY, 1967
AGE - GRADE PLACEMENT
GRADE ONE

Age March 1966	Stanford Achievement Test Grade Equivalent Scores Word Meaning Pre- (N)	Post (N)	Matched Gains (N)	Paragraph Meaning Pre- (N)	Post (N)	Matched Gains (N)	Arithmetic Pre- (N)	Post (N)	Matched Gains (N)	Lorge-Thorndike Grade Equivalent Scores Non-Verbal Pre- (N)	Post (N)	Matched Gains (N)
6	1.10 (73)	1.56 (57)	.46 (48)	1.23 (74)	1.86 (57)	.58 (50)	1.27 (76)	1.88 (57)	.59 (51)	1.01 (59)	1.80 (57)	.73 (39)
7	1.11 (58)	1.59 (58)	.42 (51)	1.20 (59)	1.87 (58)	.65 (51)	1.17 (59)	1.95 (58)	.65 (52)	1.19 (46)	2.10 (58)	1.12 (43)
8	1.12 (8)	1.36 (21)	.22 (18)	1.16 (9)	1.60 (21)	.41 (19)	1.26 (9)	1.52 (21)	.47 (19)	.57 (9)	1.37 (22)	.69 (18)
9	1.26 (3)	1.49 (7)	- -	1.23 (3)	1.81 (7)	- -	1.20 (3)	2.15 (7)	- -	1.10 (2)	2.36 (8)	- -

TABLE VI

TEST RESULTS: MARCH, 1966 AND JANUARY, 1967
AGE - GRADE PLACEMENT
GRADE TWO

	Stanford Achievement Test Grade Equivalent Scores									Lorge-Thorndike Grade Equivalent Scores		
	Word Meaning			Paragraph Meaning			Arithmetic			Non-Verbal		
Age March 1966	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)
7	1.69 (42)	2.33 (45)	.56 (39)	1.73 (43)	2.25 (45)	.47 (39)	1.58 (44)	2.29 (45)	.47	1.08 (42)	2.67 (47)	1.45
8	1.72 (74)	2.28 (62)	.47 (51)	1.77 (75)	2.36 (62)	.53 (51)	1.85 (76)	2.31 (62)	.35 (51)	1.52 (70)	2.94 (65)	1.31 (45)
9	1.75 (29)	2.30 (29)	.59 (21)	1.80 (29)	2.24 (29)	.45 (21)	1.86 (29)	2.35 (29)	.49 (21)	1.37 (27)	3.04 (29)	1.37 (22)
10	1.75 (19)	2.12 (17)	.30 (14)	1.87 (19)	2.17 (17)	.31 (14)	1.84 (20)	2.25 (17)	.26 (14)	1.90 (17)	3.27 (17)	1.14 (13)
11	1.76 (6)	2.17 (7)	.47 (7)	1.94 (6)	2.22 (7)	.49 (7)	2.13 (6)	2.27 (7)	.37 (7)	2.06 (6)	2.58 (7)	1.13 (6)
12	1.64 (6)	1.89 (4)	.42 (4)	1.65 (7)	1.94 (4)	.22 (4)	1.59 (7)	2.15 (4)	.22 (4)	2.15 (6)	2.97 (4)	.46 (3)

TABLE VII

TEST RESULTS: MARCH, 1966 AND JANUARY, 1967
AGE-GRADE PLACEMENT
GRADE THREE

	Stanford Achievement Test Grade Equivalent Scores									Lorge-Thorndike Grade Equivalent Scores		
	Word Meaning			Paragraph Meaning			Arithmetic			Non-Verbal		
Age March 1966	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)
8	2.66 (33)	3.03 (38)	.33 (29)	2.62 (33)	3.19 (38)	.55 (29)	2.33 (33)	2.94 (38)	.63 (28)	2.44 (33)	4.09 (38)	1.74 (28)
9	2.50 (56)	2.96 (58)	.32 (49)	2.49 (56)	3.09 (58)	.46 (49)	2.24 (59)	2.98 (58)	.69 (50)	2.70 (54)	4.29 (59)	1.45 (48)
10	2.41 (50)	2.73 (44)	.29 (35)	2.56 (52)	2.99 (44)	.43 (36)	2.35 (53)	3.00 (44)	.63 (36)	2.66 (50)	4.52 (44)	1.77 (35)
11	2.39 (24)	2.75 (29)	.32 (22)	2.59 (24)	2.95 (29)	.49 (23)	2.31 (25)	3.02 (29)	.72 (23)	3.78 (23)	4.59 (31)	1.14 (25)
12	2.53 (21)	2.86 (25)	.32 (20)	2.29 (21)	3.08 (25)	.35 (20)	2.62 (21)	2.95 (25)	.49 (20)	3.36 (20)	4.41 (26)	1.29 (19)
13	2.72 (8)	2.51 (15)	-.07 (10)	3.14 (8)	2.73 (15)	-.42 (10)	3.11 (8)	3.19 (15)	.07 (9)	3.81 (8)	3.95 (17)	.73 (10)
14	2.40 (4)	2.05 (4)	.15 (2)	2.32 (4)	2.17 (4)	.35 (2)	2.52 (4)	2.84 (4)	1.10 (2)	1.87 (4)	3.37 (4)	1.99 (2)

TABLE VIII

TEST RESULTS: MARCH, 1966 AND JANUARY, 1967
AGE - GRADE PLACEMENT
GRADE FOUR

	Stanford Achievement Test Grade Equivalent Scores									Lorge-Thorndike Grade Equivalent Scores		
	Word Meaning			Paragraph Meaning			Arithmetic			Non-Verbal		
Age March 1966	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)
9	3.52 (25)	4.34 (22)	.56 (19)	3.69 (25)	4.62 (22)	.56 (19)	4.01 (16)	4.88 (16)	.50 (11)	3.89 (23)	5.12 (22)	1.26 (16)
10	2.94 (49)	3.51 (41)	.49 (35)	2.96 (49)	3.56 (41)	.59 (35)	3.34 (29)	3.75 (25)	.00 (11)	2.84 (49)	4.11 (42)	1.10 (37)
11	2.94 (51)	3.55 (49)	.61 (45)	3.03 (51)	3.61 (49)	.52 (45)	3.32 (32)	3.69 (31)	.47 (19)	3.15 (49)	4.78 (51)	1.24 (44)
12	2.87 (26)	3.59 (30)	.57 (28)	2.88 (26)	3.67 (30)	.53 (28)	3.66 (13)	3.91 (15)	.81 (7)	3.37 (22)	5.22 (31)	1.46 (24)
13	2.60 (27)	3.05 (28)	.49 (26)	2.57 (27)	3.15 (28)	.62 (26)	2.74 (12)	3.91 (22)	.42 (8)	3.65 (27)	4.95 (28)	1.29 (25)
14	2.69 (13)	3.11 (15)	.60 (12)	2.77 (13)	3.19 (15)	.84 (12)	3.21 (8)	3.76 (9)	.50 (6)	4.40 (11)	5.25 (15)	1.01 (11)
15	2.16 (3)	2.83 (3)	- -	2.13 (3)	2.50 (3)	- -	- -	- -	-	4.09 (3)	3.92 (4)	2.50 (2)

TABLE IX

TEST RESULTS: MARCH, 1966 AND JANUARY, 1967
AGE - GRADE PLACEMENT
GRADE FIVE

	Stanford Achievement Test Grade Equivalent Scores									Lorge-Thorndike Grade Equivalent Scores					
	Word Meaning			Paragraph Meaning			Arithmetic			Verbal			Non-Verbal		
Age March 1966	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)
10	3.68 (18)	5.29 (9)	1.17 (9)	3.83 (18)	5.32 (9)	1.35 (9)	3.73 (5)	5.54 (6)	(1)	4.43 (18)	6.53 (9)	1.58 (9)	4.98 (18)	7.97 (9)	2.28 (9)
11	3.46 (33)	4.29 (33)	.76 (33)	3.59 (33)	4.85 (33)	1.09 (33)	4.47 (15)	4.98 (29)	.66 (12)	4.67 (32)	6.42 (33)	1.62 (32)	5.09 (32)	7.38 (33)	2.04 (32)
12	3.09 (34)	4.29 (24)	.86 (24)	3.19 (34)	4.39 (24)	.89 (24)	4.12 (17)	4.66 (15)	.70 (10)	4.39 (32)	5.96 (24)	1.41 (24)	5.13 (31)	7.50 (24)	2.15 (24)
13	3.39 (28)	4.13 (21)	.80 (17)	3.55 (28)	4.54 (21)	.88 (17)	4.43 (19)	5.14 (14)	.84 (8)	4.38 (27)	6.08 (21)	1.73 (16)	4.67 (27)	6.32 (21)	1.97 (16)
14	3.33 (15)	3.57 (13)	.40 (13)	3.55 (15)	3.64 (13)	.29 (13)	4.52 (8)	4.12 (9)	.30 (5)	4.29 (15)	4.79 (13)	.65 (12)	5.09 (15)	5.92 (13)	.99 (12)
15	2.93 (6)	3.49 (3)	.15 (2)	2.91 (6)	3.69 (3)	.30 (2)	4.25 (4)	- -	- -	3.73 (6)	5.36 (3)	1.60 (2)	3.69 (6)	6.80 (3)	1.65 (2)

TABLE X

TEST RESULTS: MARCH, 1966 AND JANUARY, 1967
AGE - GRADE PLACEMENT
GRADE SIX

Stanford Achievement Test
Grade Equivalent Scores

Lorge-Thorndike
Grade Equivalent Scores

Age March 1966	Word Meaning			Paragraph Meaning			Arithmetic			Verbal			Non-Verbal		
	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)
10	3.99 (3)	- -	- -	3.76 (3)	- -	- -	4.50 (3)	- -	- -	- -	- -	- -	- -	- -	- -
11	5.43 (6)	5.94 (7)	.64 (6)	5.49 (6)	5.41 (7)	.16 (6)	5.02 (4)	5.84 (7)	.76 (3)	7.35 (2)	11.84 (7)		8.95 (2)	9.09 (7)	2.23 (3)
12	4.33 (23)	5.16 (22)	.85 (19)	4.37 (23)	4.85 (22)	.41 (19)	4.39 (15)	5.23 (22)	.43 (13)	6.56 (12)	6.97 (22)	.12 (9)	6.44 (12)	7.07 (22)	.46 (9)
13	4.01 (18)	4.69 (18)	.83 (17)	4.08 (18)	4.67 (18)	.82 (17)	4.72 (14)	4.94 (18)	.33 (13)	4.58 (10)	6.17 (18)	.79 (11)	4.68 (10)	5.84 (18)	.49 (11)
14	3.50 (21)	3.72 (17)	.48 (16)	3.53 (21)	3.55 (17)	.40 (16)	3.66 (11)	3.86 (17)	.06 (10)	4.59 (10)	4.45 (17)	.64 (10)	5.09 (10)	5.35 (17)	.83 (10)
15	3.07 (9)	4.31 (9)	.46 (9)	3.47 (9)	4.13 (9)	.24 (9)	4.64 (6)	5.09 (9)	.29 (5)	3.63 (3)	5.38 (9)	.70 (2)	5.03 (3)	6.13 (9)	2.45 (2)

TABLE XI

TEST RESULTS: MARCH, 1966 AND JANUARY, 1967
AGE - GRADE PLACEMENT
GRADE SEVEN

	Stanford Achievement Test Grade Equivalent Scores									Lorge-Thorndike Grade Equivalent Scores					
	Word Meaning			Paragraph Meaning			Arithmetic			Verbal			Non-Verbal		
Age	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)
11	7.60 (2)	9.15 (2)	1.55 (2)	7.94 (2)	9.55 (2)	1.60 (2)	8.35 (2)	9.65 (2)	1.29 (2)	- -	- -	- -	- -	- -	- -
12	6.57 (8)	7.02 (10)	.78 (10)	6.77 (8)	7.07 (10)	.47 (10)	7.62 (8)	7.65 (10)	.30 (10)	8.87 (8)	9.11 (10)	.82 (9)	10.19 (8)	11.48 (10)	1.73 (9)
13	5.36 (24)	5.99 (21)	.37 (18)	5.80 (24)	6.48 (21)	.13 (18)	5.48 (24)	5.85 (21)	.22 (18)	7.07 (24)	7.74 (21)	.48 (17)	6.88 (24)	8.61 (21)	1.16 (17)
14	4.36 (18)	4.79 (18)	.48 (16)	4.65 (18)	5.08 (18)	.63 (16)	4.91 (18)	5.39 (18)	.04 (16)	5.55 (17)	5.39 (18)	-.41 (17)	6.40 (17)	6.62 (18)	.17 (17)
15	4.30 (2)	3.16 (3)	.26 (3)	5.50 (2)	3.23 (3)	.33 (3)	6.20 (2)	4.43 (3)	.36 (3)	5.30 (3)	3.86 (3)	.50 (3)	4.83 (3)	4.36 (3)	.50 (3)

TABLE XII

TEST RESULTS: MARCH, 1966 AND JANUARY, 1967
AGE - GRADE PLACEMENT
GRADE EIGHT

	Stanford Achievement Test Grade Equivalent Scores									Lorge-Thorndike Grade Equivalent Scores					
	Word Meaning			Paragraph Meaning			Arithmetic			Verbal			Non-Verbal		
Age	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)
13	5.89 (9)	7.00 (10)	.73 (8)	6.88 (9)	8.48 (10)	.91 (8)	6.27 (9)	6.97 (10)	.20 (8)	8.23 (9)	9.69 (10)	.76 (8)	8.56 (9)	9.59 (10)	1.22 (8)
14	5.38 (12)	6.25 (10)	.79 (10)	5.63 (12)	6.83 (10)	.96 (10)	6.52 (12)	6.39 (10)	.11 (10)	7.07 (11)	7.82 (10)	.71 (10)	6.79 (11)	7.81 (10)	.85 (10)
15	4.13 (14)	4.16 (16)	.35 (12)	3.84 (14)	4.00 (16)	.50 (12)	4.09 (14)	4.39 (16)	.09 (12)	4.35 (14)	5.06 (16)	1.18 (12)	4.22 (14)	5.18 (16)	2.02 (12)
16	3.73 (14)	3.24 (11)	.09 (11)	3.60 (14)	3.33 (11)	.11 (11)	3.94 (14)	3.72 (11)	.18 (11)	3.49 (14)	3.79 (11)	.87 (11)	3.65 (14)	4.13 (11)	.06 (11)
17	3.42 (7)	4.30 (2)	.00 (1)	3.55 (7)	4.40 (2)	.00 (1)	3.71 (6)	4.75 (2)	.00 (1)	4.03 (6)	5.80 (2)	- -	3.85 (7)	2.70 (2)	- -
18	5.03 (3)	4.25 (4)	.80 (2)	5.06 (3)	3.77 (4)	.60 (2)	6.96 (3)	5.32 (4)	.15 (2)	5.60 (2)	3.14 (4)	- -	4.40 (2)	2.77 (4)	- -
19+	5.85 (2)	- -	- -	7.15 (2)	- -	- -	9.15 (2)	- -	- -	9.05 (2)	- -	- -	7.35 (2)	- -	- -

TABLE XIII

TEST RESULTS: MARCH, 1966 AND JANUARY, 1967
AGE - GRADE PLACEMENT
GRADE NINE

	Stanford Achievement Test Grade Equivalent Scores									Lorge-Thorndike Grade Equivalent Scores					
	Word Meaning			Paragraph Meaning			Arithmetic			Verbal			Non-Verbal		
Age	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)
12	4.49 (5)	- -	- -	5.13 (5)	- -	- -	5.19 (4)	- -	- -	7.64 (2)	- -	- -	3.60 (2)	- -	- -
13	- -	7.50 (2)	- -	- -	7.85 (2)	- -	- -	6.80 (2)	- -	- -	10.00 (2)	- -	- -	9.35 (2)	- -
14	6.75 (16)	7.28 (17)	.83 (15)	7.59 (16)	7.72 (17)	.25 (15)	6.79 (16)	7.61 (17)	.80 (15)	8.14 (16)	8.75 (17)	.57 (15)	7.91 (16)	9.73 (17)	1.43 (15)
15	5.04 (36)	5.21 (32)	.32 (26)	5.50 (36)	5.46 (32)	.12 (26)	5.51 (36)	5.50 (32)	.33 (25)	5.61 (28)	6.39 (32)	1.02 (24)	5.81 (28)	6.73 (32)	1.24 (24)
16	4.66 (41)	4.82 (18)	-.01 (17)	4.84 (41)	5.49 (18)	.44 (17)	5.16 (40)	5.16 (18)	.05 (16)	5.59 (41)	5.87 (18)	.15 (16)	6.01 (41)	6.40 (18)	.96 (16)
17	4.55 (22)	5.29 (13)	.57 (12)	5.08 (22)	4.89 (13)	-.10 (12)	5.04 (22)	5.72 (13)	.43 (12)	5.51 (22)	6.32 (13)	.59 (12)	5.54 (22)	6.86 (13)	.19 (12)
18	4.34 (5)	- -	- -	3.98 (5)	- -	- -	4.32 (5)	- -	- -	4.00 (4)	- -	- -	4.07 (5)	- -	- -
19+	3.40 (2)	6.69 (2)	- -	3.35 (2)	6.80 (2)	- -	4.85 (2)	5.65 (2)	- -	4.90 (2)	6.90 (2)	- -	2.30 (2)	3.59 (2)	- -

TABLE XIV

INTERIM TEST RESULTS
MARCH AND JUNE, 1966 - AGE - GRADE PLACEMENT
GRADE TEN

	Stanford Achievement Test Grade Equivalent Scores									Lorge-Thorndike Grade Equivalent Scores					
	Word Meaning			Paragraph Meaning			Arithmetic			Verbal			Non-Verbal		
Age	Pre- (N)	Interim (N)	Matched Gains (N)	Pre- (N)	Interim (N)	Matched Gains (N)	Pre- (N)	Interim (N)	Matched Gains (N)	Pre- (N)	Interim (N)	Matched Gains (N)	Pre- (N)	Interim (N)	Matched Gains (N)
15	6.87 (13)	7.55 (11)	.80 (11)	8.44 (12)	7.94 (11)	-.44 (10)	8.16 (12)	7.29 (11)	-.70 (10)	9.43 (13)	9.21 (11)	.19 (11)	9.41 (13)	10.38 (11)	1.39 (11)
16	7.19 (24)	7.17 (16)	.16 (16)	7.77 (24)	7.58 (16)	.27 (16)	7.54 (23)	6.36 (16)	-.64 (15)	9.23 (23)	9.51 (15)	.71 (14)	9.08 (23)	8.82 (15)	7.83 (14)
17	6.41 (30)	6.27 (21)	-.02 (21)	7.11 (30)	6.58 (21)	-.34 (21)	6.36 (30)	6.18 (21)	.11 (21)	7.70 (30)	8.29 (20)	.67 (20)	7.03 (30)	8.40 (20)	1.56 (20)
18	5.49 (26)	6.12 (30)	.61 (24)	6.56 (26)	6.20 (30)	-.44 (25)	5.84 (26)	5.61 (30)	-.39 (25)	6.49 (26)	7.53 (30)	1.04 (25)	5.83 (25)	6.51 (30)	.53 (24)
19+	5.77 (15)	5.74 (18)	.08 (14)	6.38 (15)	5.68 (18)	-.21 (14)	5.61 (15)	5.46 (18)	-.05 (14)	6.73 (15)	6.69 (16)	-.15 (12)	5.79 (14)	5.03 (16)	.15 (11)

TABLE XV

FINAL SCORES AND DIFFERENCES ON THE SAT AND LORGE-THORNDIKE EDUCATION GROUP

	Stanford Achievement Test Grade Equivalent Scores									Lorge-Thorndike Grade Equivalent Scores			
	Word Meaning			Paragraph Meaning			Arithmetic			Verbal		Non-Verbal	
March 1966 Age	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Matched Gains (N)	Pre- (N)	Matched Gains (N)
10	3.05 (12)	3.30 (12)	.55 (10)	3.00 (12)	3.48 (12)	.90 (10)	2.38 (8)	3.50 (10)	.84 (8)	4.85 (4)	.89 (2)	3.34 (12)	1.73 (11)
11	3.46 (24)	4.28 (23)	.65 (21)	3.52 (24)	4.61 (23)	.94 (21)	3.97 (18)	4.81 (20)	.44 (12)	6.07 (11)	2.76 (13)	4.93 (23)	1.59 (18)
12	4.33 (23)	5.25 (21)	.74 (19)	4.54 (23)	5.19 (21)	.38 (19)	5.51 (12)	5.86 (19)	.39 (15)	6.77 (15)	.30 (12)	7.29 (18)	1.58 (16)
13	4.64 (28)	5.79 (21)	.78 (21)	4.94 (28)	6.06 (21)	.54 (21)	5.47 (23)	5.67 (21)	.01 (19)	7.08 (23)	.57 (18)	6.17 (28)	1.13 (20)
14	5.54 (25)	5.19 (25)	.37 (24)	5.89 (25)	5.48 (25)	.47 (24)	5.83 (20)	5.45 (24)	.21 (18)	7.31 (20)	-.02 (21)	7.67 (20)	.68 (23)
15	4.78 (19)	4.73 (11)	.34 (11)	5.39 (18)	4.99 (11)	.42 (11)	6.12 (17)	5.74 (10)	.08 (9)	6.12 (19)	.95 (10)	5.83 (19)	1.77 (10)
16	5.63 (21)	4.23 (3)	-0.03 (3)	6.16 (21)	4.16 (3)	-0.26 (3)	6.11 (21)	3.96 (3)	-.53 (3)	7.17 (21)	-1.26 (3)	7.28 (21)	-0.40 (3)
17	5.60 (13)	6.05 (2)	1.40 (2)	6.34 (13)	6.50 (2)	.50 (2)	6.14 (13)	7.05 (2)	.40 (2)	6.82 (13)	.30 (2)	6.59 (13)	.60 (2)

TABLE XVI

FINAL SCORES AND DIFFERENCES ON THE SAT AND LORGE-THORNDIKE
NO EDUCATION GROUP

	Stanford Achievement Test Grade Equivalent Scores									Lorge-Thorndike Grade Equivalent Scores			
	Word Meaning			Paragraph Meaning			Arithmetic			Verbal		Non-Verbal	
March 1966 Age	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Post (N)	Matched Gains (N)	Pre- (N)	Matched Gains (N)	Pre- (N)	Matched Gains (N)
10	2.76 (71)	3.27 (49)	.45 (46)	2.90 (72)	3.43 (49)	.51 (46)	2.81 (59)	3.29 (41)	.25 (32)	4.58 (10)	1.97 (5)	2.90 (72)	1.54 (49)
11	2.97 (47)	3.50 (51)	.57 (48)	3.21 (47)	3.72 (51)	.55 (49)	3.23 (35)	3.77 (40)	.67 (28)	4.98 (10)	2.11 (13)	3.75 (45)	1.22 (49)
12	3.18 (46)	3.79 (49)	.54 (48)	3.31 (46)	3.92 (49)	.52 (48)	3.73 (31)	4.13 (36)	.64 (27)	4.88 (18)	1.44 (18)	3.86 (42)	1.61 (46)
13	3.54 (41)	4.01 (38)	.55 (35)	3.69 (41)	4.10 (38)	.53 (35)	4.28 (27)	4.29 (32)	.10 (19)	5.18 (19)	.89 (14)	4.78 (36)	.79 (30)
14	3.48 (35)	4.09 (28)	.62 (27)	3.71 (35)	4.24 (28)	.48 (27)	4.47 (25)	4.68 (25)	.36 (20)	4.83 (23)	.89 (21)	5.02 (31)	.89 (26)
15	4.12 (21)	4.29 (16)	.34 (16)	4.07 (21)	4.25 (16)	.41 (16)	5.15 (18)	4.77 (15)	.04 (15)	4.93 (18)	.78 (11)	5.74 (18)	1.52 (12)
16	4.21 (26)	3.96 (14)	.04 (14)	4.19 (26)	4.42 (14)	.48 (14)	4.67 (26)	4.39 (14)	.14 (14)	4.47 (25)	.80 (14)	4.74 (24)	.17 (14)
17	4.57 (20)	4.59 (6)	.33 (6)	5.15 (20)	4.48 (6)	-.10 (6)	5.00 (19)	5.09 (6)	.44 (6)	5.59 (19)	.45 (7)	5.13 (20)	.18 (7)

TABLE XVII

MEAN GAIN SCORES ON STANFORD ACHIEVEMENT TEST AND LORGE-THORNDIKE AGES 10 - 17 COMPARING EDUCATION AND NO EDUCATION GROUPS

Age

TEST		10		11		12		13		14		15		16		17	
		Ed.	No Ed.	Ed.	No Ed.	Ed.	No Ed.	Ed.	No Ed.	Ed.	No Ed.	Ed.	No Ed.	Ed.	No Ed.	Ed.	No Ed.
		Gains (N)	Gains (N)	Gains (N)	Gains (N)	Gains (N)	Gains (N)	Gains (N)	Gains (N)	Gains (N)	Gains (N)	Gains (N)	Gains (N)	Gains (N)	Gains (N)	Gains (N)	Gains (N)
Stanford Achievement Test	WM	.55 (10)	.45 (46)	.65 (21)	.57 (48)	.74 (19)	.54 (48)	.78 (21)	.55 (35)	.37 (24)	.62 (27)	.34 (11)	.34 (16)	-.03 (3)	.04 (14)	1.40 (2)	.33 (6)
	PM	.90 (10)	.51 (46)	.94 (21)	.55 (49)	.38 (19)	.52 (48)	.44 (21)	.53 (35)	.47 (24)	.48 (27)	.42 (11)	.41 (16)	-.26 (3)	.48 (14)	.50 (2)	-.10 (6)
	A	.84 (8)	.25 (32)	.44 (12)	.67 (28)	.39 (15)	.64 (27)	.01 (19)	.10 (19)	.21 (18)	.36 (20)	.08 (9)	.04 (15)	-.53 (3)	.14 (14)	.40 (2)	.44 (6)
Lorge-Thorndike	V	.89 (2)	1.97 (5)	2.76 (13)	2.11 (13)	.30 (12)	1.44 (18)	.57 (18)	.89 (14)	-.02 (21)	.89 (21)	.95 (10)	.78 (11)	-1.26 (3)	.80 (14)	.30 (2)	.45 (7)
	NV	1.73 (11)	1.54 (49)	1.59 (18)	1.22 (49)	1.58 (16)	1.61 (46)	1.13 (20)	.79 (30)	.68 (23)	.89 (26)	1.77 (10)	1.52 (12)	-.40 (3)	.17 (14)	.60 (2)	.18 (7)

TABLE XVIII

MEAN PRE-SCORES AND FINAL MATCHED GAINS SCORES FOR STUDENTS WHO PARTICIPATED IN THE CATCH-UP PROGRAM SUMMER, 1966

	Stanford Achievement Test Grade Equivalent Scores						Lorge-Thorndike Grade Equivalent Scores			
	Word Meaning		Paragraph Meaning		Arithmetic		Verbal		Non-Verbal	
March 1966 Age	Pre- (N)	Matched Gains (N)	Pre- (N)	Matched Gains (N)	Pre- (N)	Matched Gains (N)	Pre- (N)	Matched Gains (N)	Pre- (N)	Matched Gains (N)
10	3.76 (10)	.97 (7)	3.97 (10)	1.21 (7)	4.01 (5)	-.40 (2)	4.82 (7)	1.92 (5)	5.05 (10)	2.40 (7)
11	3.21 (19)	.61 (19)	3.45 (19)	.58 (19)	3.55 (9)	.52 (9)	4.68 (12)	1.53 (12)	4.36 (20)	1.65 (20)
12	3.99 (25)	.49 (19)	4.19 (25)	.33 (19)	5.04 (12)	.53 (8)	5.77 (14)	1.55 (12)	5.17 (19)	1.65 (14)
13	4.00 (26)	.85 (22)	4.21 (26)	.49 (22)	4.68 (19)	.46 (13)	5.99 (16)	.79 (14)	5.51 (23)	1.09 (22)
14	4.24 (30)	.41 (25)	4.43 (30)	.31 (25)	4.81 (20)	.37 (16)	6.06 (19)	-.20 (17)	5.88 (23)	.75 (20)
15	4.91 (9)	.11 (5)	4.78 (9)	.06 (5)	5.48 (8)	-.50 (4)	5.37 (9)	1.05 (5)	5.17 (9)	.92 (5)
16	5.87 (4)	-.36 (3)	7.04 (4)	-.53 (3)	6.57 (4)	.06 (3)	7.77 (9)	-.03 (3)	10.10 (9)	-.80 (3)

TABLE XIX

MEAN PRE-SCORES AND FINAL MATCHED GAINS SCORES FOR STUDENTS WHO DID NOT PARTICIPATE IN THE CATCH-UP PROGRAM SUMMER, 1966

	Stanford Achievement Test Grade Equivalent Scores						Lorge-Thorndike Grade Equivalent Scores			
	Word Meaning		Paragraph Meaning		Arithmetic		Verbal		Non-Verbal	
March 1966 Age	Pre- (N)	Matched Gains (N)	Pre- (N)	Matched Gains (N)	Pre- (N)	Matched Gains (N)	Pre- (N)	Matched Gains (N)	Pre- (N)	Matched Gains (N)
10	2.61 (148)	.41 (88)	2.68 (151)	.52 (89)	2.59 (126)	.45 (62)	4.99 (13)	.97 (5)	2.74 (143)	1.37 (89)
11	3.11 (111)	.61 (96)	3.23 (111)	.69 (97)	3.34 (83)	.64 (57)	5.31 (28)	2.45 (27)	3.87 (99)	1.43 (92)
12	3.15 (113)	.69 (88)	3.23 (114)	.60 (88)	3.57 (88)	.47 (58)	5.61 (40)	.80 (35)	4.43 (93)	1.47 (76)
13	3.82 (98)	.45 (77)	4.07 (98)	.53 (78)	4.49 (76)	.27 (55)	5.94 (58)	.97 (41)	5.02 (90)	1.24 (69)
14	4.12 (79)	.63 (61)	4.42 (79)	.61 (61)	5.00 (67)	.30 (50)	5.87 (54)	.55 (50)	5.81 (66)	.96 (60)
15	4.63 (79)	.38 (50)	5.07 (78)	.27 (50)	5.49 (72)	.31 (43)	5.82 (71)	1.04 (38)	5.63 (76)	1.59 (40)
16	5.07 (80)	.08 (28)	5.29 (80)	.34 (28)	5.43 (78)	.04 (27)	6.02 (80)	.43 (28)	6.17 (79)	.65 (28)
17	5.38 (52)	.40 (16)	5.83 (52)	-.13 (16)	5.61 (51)	.23 (16)	6.47 (51)	.41 (16)	5.99 (52)	.06 (16)

TABLE XX

PRE- AND POST TEST RESULTS FOR CHILDREN ENTERING FIRST GRADE IN SEPTEMBER, 1966, COMPARING THOSE WHO HAD PARTICIPATED IN THE SUMMER SESSION WITH THOSE WHO HAD NOT.

	Pre- Test Means September, 1966					Post Test Means January, 1966					Mean Gains				
	STANFORD ACHIEVEMENT TESTS				LORGE-THORNDIKE	STANFORD ACHIEVEMENT TESTS				LORGE-THORNDIKE Non-Verbal	STANFORD ACHIEVEMENT TESTS				LORGE-THORNDIKE Non-Verbal
	WM (N)	PM (N)	Voc. (N)	Ar. (N)		WM (N)	PM (N)	Voc. (N)	Ar. (N)	(N)	WM (N)	PM (N)	Voc. (N)	Ar. (N)	(N)
First Grade Children In Summer Program 1966	.87 (74)	.88 (74)	.50 (75)	.97 (73)	.42 (76)	1.15 (71)	1.40 (71)	1.17 (71)	1.28 (71)	.99 (71)	.29 (63)	.52 (63)	.64 (64)	.31 (63)	.67 (63)
First Grade Children Not In Summer Program 1966	.80 (54)	.92 (54)	.50 (54)	.95 (54)	.18 (48)	1.13 (55)	1.39 (55)	1.21 (55)	1.23 (55)	.68 (59)	.35 (45)	.48 (45)	.66 (45)	.23 (44)	.49 (43)
All First Grade Children	.84 (128)	.90 (128)	.50 (129)	.96 (127)	.33 (124)	1.15 (71)	1.39 (71)	1.19 (71)	1.26 (71)	.85 (130)	.32 (108)	.50 (108)	.65 (109)	.28 (107)	.60 (106)

Appendix F

Appendix F - 1

TO: All Faculty participating in the Reading Program

FROM: Edith Grotberg, Project Director
Marilyn Outlaw, Asst. Project Director
Paul Barth, Field Supervisor

DATE: February 2, 1967

We have asked you many questions over the past year and you have been most generous in responding. We have never asked you, however, about yourself as a teacher, a professional person. We would like to know if the reading program did anything to your feelings about yourself as a teacher.

Would you respond to the following statements. And thank you for your wonderful cooperation.

CIRCLE THE APPROPRIATE NUMBER

1. I felt I was a better teacher _____ the reading program.

Before / No Change / During
1 2 3 4 5

2. I had greater freedom as a teacher _____ the reading program.

Before / No Change / During
1 2 3 4 5

3. My pupils learned better _____ the reading program.

Before / No Change / During
1 2 3 4 5

4. I felt closer to my pupils _____ the reading program.

Before / No Change / During
1 2 3 4 5

5. I enjoyed teaching more _____ the reading program.

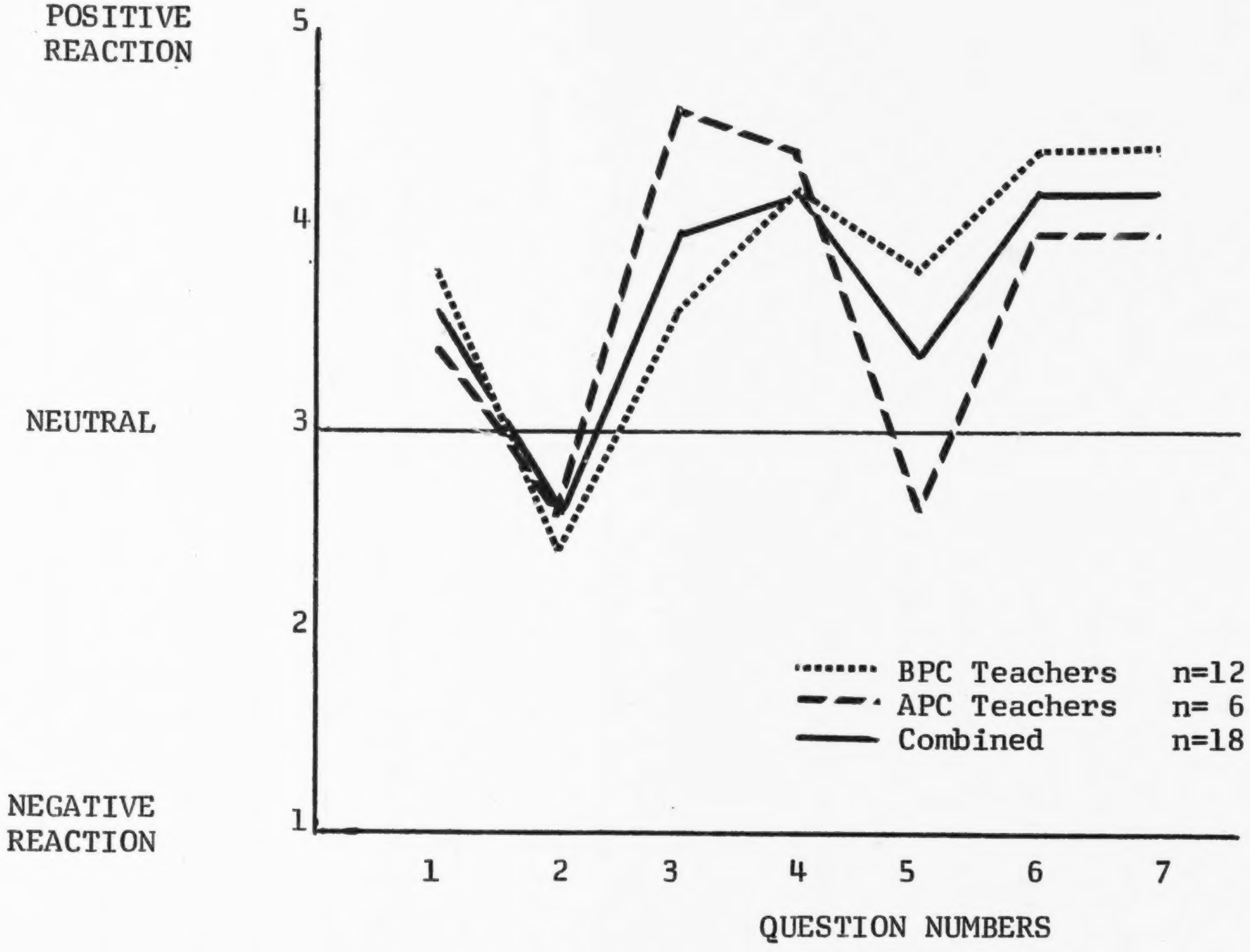
Before / No Change / During
1 2 3 4 5

6. I learned more about teaching _____ the reading program.

Before / No Change / During
1 2 3 4 5

7. I learned more about reading instruction _____the reading program.

Before / No Change / During
1 2 3 4 5



Questions

1. I felt I was a better teacher during the reading program.
2. I had greater freedom as a teacher during the reading program.
3. My pupils learned better during the reading program.
4. I felt closer to my pupils during the reading program.
5. I enjoyed teaching more during the reading program.
6. I learned more about teaching during the reading program.
7. I learned more about reading instruction during the reading program.

Fig. F2 A plot of the subjective evaluations of PE teachers on the items shown in Appendix F-1. For each of the items (shown on right) each teacher made an entry on a five point scale. Each point on the figure represents the relative position of all entries.

Appendix G

RELATED LITERATURE

Research literature concerning the socially and educationally disadvantaged is extensive in both scope and variety. For purposes of the present study, reviews of research were selected from the works of Robert Green, (1964; 1966), Edmund Gordon, (1964), Edith Grotberg, (1965), and Myron Woolman, (1963). Each has written a review of research concerning the disadvantaged and each has been involved with the Prince Edward County educational situation.

The areas of research most pertinent to the present project and delineated by the selected authors are: (1) criteria for determining socioeconomic and educational disadvantage; (2) Problems of IQ scores for disadvantaged children; (3) school achievement; (4) reading retardation; and (5) the cumulative effects of educational deprivation.

Criteria for Determining Socioeconomic and Educational Disadvantage

Criteria for determining socioeconomic and educational disadvantage were established by the Department of Labor in terms of: (1) wages; (2) occupation; (3) housing; and (4) educational level. The Prince Edward County Negro population met each of the criteria as follows:

According to the wage criterion, a family income of $2,000.00 or less per year is the critical figure identifying the economically deprived families. The mean income per family of the Negro population of Prince Edward County, as reported by the 1960 U. S. census was $1,500.00.

According to the occupation criterion, unskilled, semi-skilled labor or unemployment constitute the characteristics of the disadvantaged head of household. In Prince Edward County, according to Green, (1964), only 38 of 332 heads of household had work which classified them as middle class. The remainder met the criteria for holding occupations of the disadvantaged. Their low income was further complicated by poor housing, poor roads and inadequate communication.

According to the educational criterion, Prince Edward County Negroes were disadvantaged in terms of per pupil expenditure and educational facilities. In 1959, the mean annual sum spent per pupil on a nationwide basis by local boards of education was $390.00. In Virginia, the mean annual sum spent per pupil in 1959 was $275.00. But between the years from September, 1959 to September, 1963, nothing at all was spent by the Prince Edward Board of Education for the Negro population other than for routine maintenance of existing facilities.

This educational deficiency predated the closing of Prince Edward County schools in 1959. Most of the Negro schools were poorly constructed, wood framed, tarpapered buildings heated only by wood stoves and were totally inadequate in terms of sanitation. Compared to the white schools of the county, which were entirely heated, with internal toilet facilities, solidly constructed of brick, Negro schools had less than one fourth the value of the white schools. Only Moton High School, built in 1953, and the Mary E. Branch No. 1 were comparable in construction to the white facilities. (Gordon, pp 4-5).

The Prince Edward County Negro children, then, virtually as an entire population group, met each of the criteria of the socio-economic and educationally disadvantaged.

Problems of IQ Scores for Disadvantaged Children

From a developmental point of view, we consider each individual as the product of both his nature and his nurture. In other words, he is the composite of his heredity and his environment and the resultant of his continual interaction with his environment. Thus an individual's intellectual level of function will be the result of his individual inheritance and his reaction to environmental factors such as education, social class, parental attitude, motivation and habitat. Most of the research, however, continues to stress the separation of heredity and environment.

Research consistently reveals that disadvantaged children generally have lower IQ scores as measured by standardized intelligence tests. Deutsch and Brown (1964) conducted an important study with 543 urban public school children stratified by race, grade level, and social class. The Level I Primary Battery of the Lorge-Thorndike Intelligence Test was used for the first grade classes, and Level III was used for the fifth grade classes. Both forms are essentially nonverbal. The authors found no significant differences in IQ scores between first grade and fifth grade children. Highly significant differences were found, however, both between scores of Negro and white children and between class levels. Further, IQ differences continued between races in different class levels, with the differences increasing as the class level became higher.

The racial aspect of intelligence test scoring continues to cloud the educational issues. Shuey (1958) referred to 72 studies in which a total of 36,000 Negro children were tested, and the average IQ score was determined to be 85. Klineberg (1963), on the other hand, interpreted these and similar studies which she interpreted as genetically related to suggest environmental determinants of IQ score variations. Anastasi (1958), pointed out that referring to mean differences between races is misleading. She indicated that if 30 percent of the Negroes reach or exceed the white median, the percentage who reach or exceed the lowest score of the white group will be approximately 99. Edmonds (1962) similarly warned against using median scores to compare racial groups. Distribution scores are more meaningful, according to this author who emphasized the point that differences within the races far exceed differences between the races.

The environmental factors emphasized by Klineberg tend to receive support from a number of studies. Lee (1951) reported that the IQ scores of Negro children migrating from the South to Philadelphia improved steadily and significantly with length of residence in the northern metropolis. Klineberg (1963) reported similar continous gains in IQ scores of Southern Negro children who moved to New York City. These gains were due, presumably, to acculturation. Brazziel and Terrel (1962) reported an experiment with 26 Negro first grade children in Tennessee, where scores on IQ tests and on the Metropolitan Readiness Test rose to national averages as a result of involving parents and children in a six week enrichment program including (a) readiness materials, (b) intensified activities to develop perception, vocabulary, word reasoning, and ability and will to follow directions, plus (c) conferences and regular meetings with the parents. In contrast, scores for the control groups remained significantly below those for the experimental group on the Metropolitan Readiness Test. While control group IQ tests were not included for comparison, the authors stated that the mean IQ score of the experimental group (106.5) was 16 points above the general expectations for disadvantaged children. Although the results of the overall program are impressive, the authors did not isolate or control variables sufficiently to determine what in the program caused the shift in test performances. Deutsch (1964a) reported similar increases in IQ scores among preschool children as a result of the preschool nursery programs which he initiated in New York.

School Achievement

There are disadvantaged groups other than racial groups which have learning disabilities as determined by lack of adequate school achievement. These groups include school dropouts, children of migrant workers, and to some extent rural children.

Dreger and Miller (1960), in a comprehensive report comparing school achievement levels of Negro and white children in the United States, reported generally lower achievement among Negroes. School dropouts, a group not limited by race, consistently demonstrate poor school achievement. Williams (1963), reporting on Maryland dropouts, stated that 56.5 percent of the dropouts had not achieved according to their abilities. This figure applied to those of average or above average ability as well as those with below average ability. In terms of course failure, 47.5 percent were failing three or more subjects during the semester they left school. The U. S. Department of Agriculture, Economic Research Service (1962) reported an association between school achievement and graduation from high school. In the bottom quartile of academic achievement 20.1 percent dropped out of school as compared to 5.3 percent of the top quartile. The U. S. Department of Health, Education, and Welfare, Office of Education (1962) reported that more than half of the children of migrant workers are retarded educationally from one to four years. Among rural dropouts in Louisiana, Bertrand (1962) found a significant difference in academic achievement between the dropouts and the youths in school, even though there was no significant difference in intelligence. He suggested that a number of factors contributed to the dropout problem of rural youth: traveling distances, reduced participation in school activities, lower school achievement, lower expectations from the teachers, and the low socio-economic standing of parents.

Folkman (1962), in examining the progress of 2,200 rural and urban students entering Iowa State University in the fall of 1955, found that while rural students rated slightly above their urban classmates on their high school grade point average and on their percentile rank in the high school graduating class, they fell considerably below the urban students on the college entrance examinations. The major reason for these lower scores appeared to be deficiencies, particularly in mathematics.

Simsarian (1966) in studying the academic achievement and adjustment of 25 Prince Edward County children placed in homes and school in and around the Washington, D. C. area during the school closing 1959 - 1963, made these observations:

> Twenty of the children were retarded in their academic work from two to four years. A six- and ten-year-old sibling pair who lived together in one foster family were exceptional in being up to grade level. The mother of these children was a high school graduate and registered nurse; this was the only family in which even one parent had completed high school. School must have been a problem for the foster children as a group, but they kept trying. There were no reports of unmanageable behavior in school, truanting, or absenteeism. The children's ability to enter new schools and to continue trying to get along, often against great odds, was an important factor.

> It is worth commenting that these children, were described consistently as appearing small, young, and immature for their age. Foster parents also spoke of the children's limited selections in foods and of their efforts to encourage them to eat a more balanced diet. Possibly their previously inadequate diet, as indicated by this lack of familiarity with a variety of food, contributed to their small stature. In any event, their youthful appearance turned out to be an unexpected advantage, since their academic retardation required placement in classes with younger children. (p. 92)

Reading Retardation

While reading retardation is related to school failure, it needs closer examination, since it provides an avenue for determining more specifically the patterns of experience and learning which are characteristic of reading retardation and related school failure. Reading retardation is a conspicuous variable and one which school systems use consistently for educational planning, for evaluation of school curricula and teaching and for predicting future success or failure of students. In studying a large Midwestern metropolis, Sexton (1961) found that mean achievement scores favored the higher income groups increasingly from grade to grade, and that the lowest scores of the lower income children consistently occurred in the reading portions of the tests. Arithmetic and work skills tended to be higher, suggesting that lower class children are especially disadvantaged verbally. Barton (1963) found a consistent relationship between socio-economic level and progress in reading. In a number of studies of reading retardation among selected groups, retardation was found to be most pronounced among school dropouts, (U. S. Department of Labor, Bureau of Labor Statistics, 1960), children of migrant workers (U. S. Department of Health, Education, and Welfare, Office of Education, 1962), and children from the lower classes in general (Deutsch, 1964b).

Linguistics and Language Patterns

Research pursued in the area of linguistics and language patterns reflects an assumed conflict between the language structure and patterns which disadvantaged children acquire early in their development and the subsequent different language structure and patterns of the schools.

Bernstein (1960) provided basic information concerning social class and linguistic behavior. Studying English families, he found two distinct types of language significantly related to class membership. The lower class used a restricted form and the middle class used an elaborated form. The elaborated form was more consistent with school and textbook language. Bernstein (1959) determined in his studies that lower class speech in English families is not only different from middle and upper class speech but is deficient for educational purposes.

An important study of American children was conducted by Loban (1964). Using a stratified sample of 388 children in the kindergarten through the sixth grade from the Oakland, California, public schools, he attempted to describe accurately the use and control of language, the effectiveness in communication, and the relationships among the subjects' oral, written, and reading uses of language. The findings revealed that except for linking-verb patterns and the use of partial expressions or incomplete sentences, the differences in structural patterns tended to be small between the low and high socio-economic groups. Very important differences, however, did appear in the dexterity with which subjects used elements within the structured patterns: the high socio-economic group used more clauses, infinitives, and verbals than did the low socio-economic group. Reading, writing, listening, and oral language showed a positive interrelationship and also a positive relationship with socio-economic group. Templin (1958) reported a similar relationship between sentence length and complexity of sentence structure with socio-economic level.

Frazier (1964), as a result of extensive research, suggested three kinds of underdeveloped language found among disadvantaged children with learning disabilities: (a) true verbal destitution, that is, there is actually less language; (b) full but nonstandard language development, that is, the language is highly developed but deviates sufficiently from standard English to require further language development; and (c) unconceptualized experience and underdeveloped language, that is, the language is well developed, but in certain aspects of experience valued by the school there may have been no occasion to verbalize meanings. These findings suggest that there might well be different kinds of language development among disadvantaged children.

Newton (1964), interpreting the data from structural linguistics, submitted the following premises as important in attempts to aid language development of disadvantaged children: (a) Oral language is the kingpin of the communicative arts. (b) Written language is a conventionalized, coded representation of vocal language. (c) Language development and use have a universal sequence; that is, listening, speaking, reading, then writing. (d) Vocabularies for listening, speaking, reading, and writing vary markedly. (e) Structural arrangements are learned unconsciously in infancy and early childhood through auditory perception and vocal imitation.

Since deficiencies in language skills and language development appear to be characteristic of disadvantaged children with learning disabilities, the reviewer has included an examination of the research pertaining to more basic factors in language development in an attempt to determine their relationship to learning disabilities among disadvantaged children.

Perception, Conception, Cognition and Vocabulary

Deutsch (1963) found through experimentation that disadvantaged children have inferior auditory discrimination, visual discrimination, time concepts, and number concepts. He found no physical defects of eyes, ears, or brain. The deficiencies were attributed to inferior habits of hearing, seeing, and thinking. He postulated that these children were deprived of sufficient variety of stimuli to which they were maturationally capable of responding and were therfore less prepared for school learning. Christine and Christine (1964) indicated the relationship of auditory discrimination and articulatory defects and reading retardation. Bruner (1961) reported, as a result of his studies of cognitive consequences of sensory deprivation, that children so deprived are handicapped not only in constructing models of the environment but also in developing strategies for evaluating information. Russell (1954) suggested from his studies that concept and language development--that is, "meaning-idea"--develop simultaneously and pointed out the consequent importance of teaching disadvantaged children concepts and language at the same time.

Figurel (1964), examining vocabulary differences between disadvantaged children and the middle class population, reported that in second grade the vocabulary of disadvantaged children was approximately one third that of middle class children and that in sixth grade the vocabulary was approximately one half. He stated further that second grade children in slum areas knew fewer than half of the words in the vocabulary of middle class preschool children. Specifically, words such as sink, chimney, honey, beef, and sandwich were learned one or two years later by disadvantaged children. He pointed out, however, that some disadvantaged children did have rather large vocabularies but that these were not appropriate or adequate for school. His findings support Frazier's findings described above.

Cumulative Effects of Social and Cultural Background

As stated earlier, Deutsch and Brown (1964) found that being a member of a lower class was a greater determinant of low achievement and low IQ scores than was race, but that race increasingly became a determinant as the class level went up. Froe (1964), looking at social and cultural background and race factors, found that Negro entering college freshmen tested below white entering college freshmen in all aptitude and achievement tests, even after the college selection process had operated. He concluded that the selection hypothesis needs re-examination and that the subculture from which Negro children come leaves them with many learning disadvantages which they take to college. Newton (1960) described the language deficiencies of Negro entering college freshmen as including limited vocabularies, deficient use of descriptive or qualifying words, and inability to comprehend figurative language. The evidence for continued decline in aptitude and achievement test scores of disadvantaged children over the years, regardless of race, is consistent throughout the research (Masland, Sarason, and Gladwin, 1958).

Career choices of rural youth were examined by Burchinal (1962). Not only are rural youth less well prepared for college than are urban youth, but he found fewer rural youth with college plans. He concluded that educational aspirations of farm children, regardless of sex, intellectual ability, or family status, usually were lower than those of comparable children from rural nonfarm or urban homes. The U. S. Department of Commerce, Bureau of the Census, and U. S. Department of Agriculture, Economic Research Service (1962) reported that in 1960 about one third of all rural high school graduates were enrolled in college as compared with almost half the urban graduates. These differences persisted when rural and urban youth were equated according to IQ and status levels of their families.

Factors associated with learning disabilities of disadvantaged children are identifiable, but they operate neither independently nor with a clearly predictable pattern. As has been indicated thus far, race is not sufficient to determine learning disabilities, since farm youth and migrant children indicate similar disabilities. Class is not sufficient to predict learning disabilities, since dropouts come from all classes and consistently reveal learning disabilities as measured by poor school achievement. In order to understand these research findings, it seems necessary to formulate a theoretical framework within which findings become more meaningful and also to provide guidelines for future research on learning disabilities and remediation among disadvantaged children.

Appendix H

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